Pomegranate Juice

[Effects of Pomegranate Juice in Athletes]

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The aim of the present study was to assess the effects of pomegranate juice on the level of oxidative stress in blood of endurance-based athletes.

RESEARCH TITLE: Effects of Pomegranate Juice in Circulating Parameters, Cytokines and Oxidative Stress Markers in Endurance-Based Athletes: A Randomised Controlled Trial

COUNTRIES: Spain

CONDUCTED BY: Toxicology Unit. Institute of Bioengineering, University Miguel Hernandez. Elche- Alicante. Spain; Biochemistry and Cell Therapy Unit. Institute of Bioengineering, University Miguel Hernandez. Elche (Alicante); Immunology

Division, Biotechnology Department, University of Alicante. San Vicente del Raspeig (Alicant), SPAIN; Immunology Division, Biotechnology Department, University of Alicante. San Vicente del Raspeig (Alicant), SPAIN;

PUBLISHED ON: Nutrition

RESEACH:

Abstract

The aim of the present study was to assess the effects of pomegranate juice on the level of oxidative stress in blood of endurance-based athletes. Pomegranate juice is rich in polyphenols, conferring it a higher antioxidant capacity than other beverages with polyphenolic antioxidants.

A randomized, double-blind, multicenter trial was performed in athletes from 3 different sport clubs located in the southern region of Spain. Plasma oxidative stress markers (protein carbonyls and malondialdehyde (MDA)) as well as C-reactive protein and sE-selectin were measured.

A total of 31 athletes participated in the study, supplemented during 21 days with 200 ml/day pomegranate juice (PJ) (n=10), 200 ml/day pomegranate juice diluted 1:1 with water (PJD) (n=11) and a control group not consuming pomegranate juice (C) (n=10). Nine volunteers were excluded due to protocol violations (n=4 in the PJ group and n=5 in the PJD group) since they did not respect the 24 h of rest before the last blood test.

The control group increased levels of carbonyls (+0.7 ± 0.3 nmols/mg protein) and MDA (+3.2 ± 1.0 nmols/g protein), while pomegranate juice and PJD groups maintained or decreased their levels, respectively. On the other hand, lactate levels increased in the pomegranate juice group (from 10.3 at day 0 to 21.2 mg/dL at day 22).

A non-significant decrease was detected in sE-selectin and C-reactive protein in the groups consuming pomegranate juice. Consumption of pomegranate juice during 21 days improves MDA levels and carbonyls, decreasing the oxidative damage caused by the exercise.

YEAR: 2015

https://zumodegranada.com/en/effects-of-pomegranate-juice-in-athletes/

[Pomegranate Juice Improves Iron Status]

Pomegranate Juice Improves Iron Status

Ayurveda, an Indian system of medicine, describes pomegranate (Punica granatum) fruits as a Rasayana and a dietary supplement for managing a condition called Pandu, which is akin to Iron Deficiency Anemia. Let´s see what the investigation concluded about it.

RESEARCH TITLE: Pomegranate Juice Improves Iron Status and Ameliorates Iron Deficiency Induced Cellular Changes in Saccharomyces cerevisiae

COUNTRIES: India

CONDUCTED BY: *S.P. Balasubramani, G. Padmagiri, P. Venkatasubramanian, R. Vidyashankar, A. Godbole*

PUBLISHED ON: Lifesciences global

RESEACH:

Background

Iron Deficiency Anemia (IDA) is most prevalent form of anemia affecting around 2 billion people world-wide. Ayurveda, an Indian system of medicine, describes pomegranate (Punica granatum) fruits as a Rasayana and a dietary supplement for managing a condition called Pandu, which is akin to Iron Deficiency Anemia. Rasayanas are methods to maintain homeostasis by improving digestion, metabolism and absorption of nutrients and elimination of waste. Yeast (Saccharomyces cerevisiae) has been a well-accepted model organism to study iron metabolism.

Materials & Methods

In the current study we developed 'anemic yeast' by culturing yeast cells in iron-free medium with bathophenanthroline disulfonate (BPS). The effect of pomegranate juice on reversing the 'Iron Deficiency Anemia like' condition in yeast was studied.

Results

Culturing iron deficient (ID) cells in the presence of 10% pomegranate juice supplemented medium (IDP), improved iron status by at least 7 fold ($p<0.0001$) and reversed mitochondrial degeneration induced by iron deficiency. Percentage of healthy reticulate mitochondria in IDP cells was >30% higher ($p<0.0001$) than that in the iron deficient cells grown in iron deficient medium (IDD) and at least 14% more than that in ID cells grown in 10% Pomegranate Juice-equivalent iron substituted media. Interestingly, Pomegranate Juice substitution improved the functional ferrous (Fe^{2+}) form as well as the bio-assimilated heme form of iron, but not the ferric (Fe^{3+}) storage form in iron deficient cells.

Conclusion

Yeast model can be useful as a quick screen to identify potential nutritional supplements. Pomegranate's potential role as a nutritional supplement in Iron Deficiency Anemia management and as a hematinic is worthy of further research.

YEAR: 2015

https://zumodegranada.com/en/pomegranate-juice-improves-iron-status/

Ameliorative effects of quince fruit on diabetes

Ameliorative effects of quince fruit on diabetes

The objective of the present study was to evaluate the effect of aqueous extract of Cydonia oblonga Mill. Fruit on lipid profile and some biochemical parameters in streptozotocin-induced diabetic rats.

WEB TITLE: Ameliorative effects of quince fruit on diabetes

COUNTRIES: Iran

CONDUCTED BY: Department of Pharmacology and Toxicology, School of Pharmacy, Zanjan University of Medical Sciences, Zanjan, Iran; Department of basic science, Science and Research branch, Islamic Azad University, Tehran, Iran; Faculty of Pharmacy, Shahid Beheshti University of Medical Sciences, Tehran, Iran; Department of Immunology, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran.

PUBLISHED ON: Iranian Journal of Pharmaceutical Reseach

RESEARCH:

Diabetes mellitus is associated with complications in several different systems of the body, and the incidence of diabetes is rapidly increasing worldwide. The objective of the present study was to evaluate the effect of aqueous extract of Cydonia oblonga Mill. Fruit on lipid profile and some biochemical parameters in streptozotocin-induced diabetic rats. The extract showed anti hyper lipidemic activity as evidenced by significant decreases in serum triglyceride, total cholesterol, and low density lipoprotein cholesterol (LDL-C) levels along with the elevation of high density lipoprotein cholesterol (HDL-C) in the diabetic rats. The biochemical liver functional tests were also analyzed and it was shown that serum biomarkers of liver dysfunction, including alanine transaminase (ALT), aspartate transaminase (AST), and alkaline phosphatase (ALP) were significantly reduced in aqueous extract of Cydonia oblonga Mill. treated diabetic rats. In addition, our results showed that the oral administration of the extract prevented diabetes-induced increase in serum urea and creatinine levels as the markers of renal dysfunction. In conclusion, the present study indicates that aqueous extract of Cydonia oblonga Mill. Is able to improve some of the symptoms associated with diabetes and possesses hypolipidemic, hepatoprotective, and renoprotective effects in streptozotocin-induced diabetic rats.

Serum lipid profiles: The results of the serum lipid profile showed that streptozotocin injection led to the development of hyperlipidemia in which serum triglyceride, total cholesterol, and LDL-C markedly ($p < 0.001$) increased when compared to the control group (Figure 1-3). However, HDL-C decreased in diabetic rats in comparison with the normal control (Figure 4). As shown in Figure1-4 the different concentrations of aqueous extract of Cydonia oblonga Mill. Fruit caused a significant decrease in the serum triglyceride, total cholesterol, and LDL-C, but a significant increase in HDL-C levels in the diabetic rats during 6 weeks of the treatment.

Liver parameters: Serum activities of ALT, AST, and ALP as the markers of liver function significantly ($p < 0.001$) were increased in the untreated diabetic rats in comparison to the non-diabetic rats (Figure 5-7). The extract at the concentrations of 80, 160, and 240mg/kg caused a significant decrease in the biomarkers of liver injury in the diabetic rats treated with the extract ($p < 0.001$).

Drug-induced diabetes is one of the most commonly used experimental diabetic models (28). In the present study diabetes was induced in rats by injection of streptozotocin. Diabetes is often accompanied by hyperlipidemia that manifests marked elevations of cholesterol, triglyceride, and LDL-C as well as low concentration of HDL-C (29, 30). These serum lipid abnormalities result due to disruption of fatty acid metabolism (31). Our results confirm that hyperlipidemia was occurred in the diabetic rats. Natural products that reduce or alter serum lipid profiles have proved to be effective for the treatment of many diabetic complications (32). Our findings showed that the oral administration of aqueous extract of Cydonia oblonga Mill. Fruit was able to ameliorate serum lipid profiles in the diabetic rats. It can be therefore suggested that quince fruit could be a potential source of hypolipidemic agent (s) and it can be used in the management of hyperlipidemia in diabetic patients. Diabetes plays a central role in the initiation and progression of liver injury and this progressive disease is an independent risk factor for the development of chronic liver diseases (33, 34). The serum activities of ALT, AST, and ALP are biomarkers of hepatic injury (15, 35). ALT and AST are transaminase enzymes that catalyse amino transfer reactions and play an important role in amino acids catabolism and biosynthesis (36, 37). In addition, ALP is a hydrolase enzyme which acts as non-specific phosphomonoesterases to hydrolyse phosphate esters (38). In the present study, the serum elevation of liver damage biomarkers was occurred as a result of deleterious effect of hyperglycemia in the liver of diabetic rats. Increasing the activities of these enzymes is mainly due to leakage of the enzymes from the liver into the blood stream as a result of streptozotocin toxicity which leads to the liver damage. However, the treatment of diabetic groups with the extract of Cydonia oblonga Mill. for 42 consecutive days could ameliorate the activities of the above enzymes. A possible explanation for the hepatoprotective effects of the extract is that this fruit may inhibit the liver damage induced by streptozotocin. These results

suggest a hepatoprotective role for quince fruit against liver injury associated with diabetes. Diabetes mellitus is also associated with complications in the renal system. Patients with diabetes experience major long-term complications such as nephropathy and diabetic nephropathy is one of the leading causes of end-stage renal disease (ESRD) in the world (39, 40). Our results reconfirmed that the plasma levels of urea and creatinine, which are considered as significant biomarkers of renal dysfunction (41), were increased in the experimentally induced-diabetes. However, the treatment of diabetic rats with the extract of Cydonia oblonga Mill. reduced their plasma urea and creatinine levels. This implies that quince fruit normalizes the function of kidneys in the diabetic rats. It was reported that the extract of Cydonia oblonga Mill. leaves possessed remarkable hypoglycemic effect in streptozotocin-induced diabetic rats. The leaves extract also showed antioxidant activity and protected the heart tissue against lipid peroxides produced by diabetes (23). In addition, Cydonia oblonga Mill. Leaf extracts showed hypolipidaemic and hepatoprotective effects in the rat model of hyperlipidaemia (22). Our results demonstrated that the fruit of Cydonia oblonga Mill. possesses hypolipidemic, hepatoprotective, and renoprotective effects in streptozotocin-induced diabetic rats. Previous studies have also shown that Cydonia oblonga Mill. Fruit contains polyphenols (19). It is well established that polyphenolic compounds have hypoglycemic activity and prevent the development of diabetic complications (42, 43). Therefore, the presence of these constituents may explain the protective effects of this fruit in diabetes-related complications. However, we believe that further studies are necessary to determine the exact nature of the active components and the mechanism of action of Cydonia oblonga Mill. Fruit in diabetes and its associated complications.

Conclusion: The results of this study demonstrate that the oral administration of aqueous extract of Cydonia oblonga Mill. Fruit improve serum lipid profile in diabetic rats by lowering cholesterol, triglyceride, and LDL-C levels and raising HDL-C levels. In addition, the hepatoprotective effect of quince fruit is demonstrated by the significant reduction of serum levels of ALT, AST, and ALP in the diabetic treated rats. The extract also improved renal function in diabetic rats by reducing serum urea and creatinine. It can be concluded that Cydonia oblonga Mill. Fruit possesses hypolipidemic, hepatoprotective, and renoprotective effects in streptozotocin-induced diabetic rats.

YEAR: 2015

https://zumodegranada.com/en/ameliorative-effects-of-quince-fruit-on-diabetes/

Photoprotection by Punica granatum seed oil

The aim of this study was to analyze the photoprotection provided by Punica

Photoprotection by Punica granatum seed oil

The aim of this study was to analyze the photoprotection provided by *Punica granatum* seed oil nanoemulsion entrapping the polyphenol-rich ethyl acetate fraction against UVB-induced DNA damage in the keratinocyte HaCaT cell line.

RESEARCH TITLE: Photoprotection by *Punica granatum* seed oil nanoemulsion entrapping polyphenol-rich ethyl acetate fraction against UVB-induced DNA damage in human keratinocyte (HaCaT) cell line

COUNTRIES: Spain; Brazil

CONDUCTED BY: Departament de Fisiologia, Facultat de Farmàcia, Universitat de Barcelona, Barcelona, Spain; Unidad de Toxicología y Ecotoxicología del Parc Cientific de Barcelona, Barcelona, Spain; Programa de Pós-Graduação em Farmácia, Universidade Federal de Santa Catarina,Florianópolis, Brazil

PUBLISHED ON: Journal of Photochemistry and Photobiology B: Biology

RESEACH:

Abstract

There has been an increase in the use of botanicals as skin photoprotective agents. Pomegranate (*Punica granatum* L.) is well known for its high concentration of polyphenolic compounds and for its antioxidant and anti-inflammatory properties. The aim of this study was to analyze the photoprotection provided by *Punica granatum* seed oil nanoemulsion entrapping the polyphenol-rich ethyl acetate fraction against UVB-induced DNA damage in the keratinocyte HaCaT cell line. For this purpose, HaCaT cells were pretreated for 1 h with nanoemulsions in a serum-free medium and then irradiated with UVB (90–200 mJ/cm^2) rays. Fluorescence microscopy analysis provided information about the cellular internalization of the nanodroplets. We also determined the*in vitro* SPF of the nanoemulsions and evaluated their phototoxicity using the 3T3 Neutral Red Uptake Phototoxicity Test. The

nanoemulsions were able to protect the cells' DNA against UVB-induced damage in a concentration dependent manner. Nanodroplets were internalized by the cells but a higher proportion was detected along the cell membrane. The SPF obtained (~ 25) depended on the concentration of the ethyl acetate fraction and pomegranate seed oil in the nanoemulsion. The photoprotective formulations were classified as non-phototoxic. In conclusion, nanoemulsions entrapping the polyphenol-rich ethyl acetate fraction show potential for use as a sunscreen product.

Conclusion

Our results suggest that pomegranate seed oil nanoemulsion entrapping pomegranate peel polyphenol-rich extract has great potential to be used as a sunscreen. EAF-loaded NE were internalized by the keratinocyte cells and also accumulated along the cell membrane. Formulations protected the cells' DNA against UVB-induced damage, protection was concentration dependent. The SPF determined for EAF-loaded NE was relatively high given that no synthetic filters were involved. No phototoxic effect was observed after incubation of EAF or EAF-loaded NE with 3T3 mouse fibroblasts or human keratinocyte HaCaT at the concentration tested. The data presented here can be considered a starting point for the initiation of the use of pomegranate seed oil nanoemulsion entrapping pomegranate peel polyphenol-rich extract for photoprotection against UVB radiation and its damaging effects on human skin. However, further studies are needed to better understand this photoprotective effect.

YEAR: 2015

https://zumodegranada.com/en/photoprotection-by-punica-granatum-seed-oil/

Antioxidant profile of cookies fortified with juice and peel of fresh Pomegranate

Antioxidant profile of cookies fortified with juice and peel of fresh Pomegranate

Peel powder and juice of fresh pomegranate (Punica granatum) were utilized to prepare cookies as sources of antioxidants, along with the other common ingredients, in the present study.

RESEARCH TITLE: Antioxidant profile and sensory evaluation of cookies fortified with juice and peel powder of fresh Pomegranate (Punica granatum)

COUNTRIES: India

CONDUCTED BY: Department of Food & Nutrition, Sarada Ma Girls' College, Kolkata, India

PUBLISHED ON: Agricultural and Food Sciences

RESEACH:

Peel powder and juice of fresh pomegranate (Punica granatum) were utilized to prepare cookies as sources of antioxidants, along with the other common ingredients, in the present study. The components were added in different proportions during the cookie preparation and their rheological, sensory and antioxidant properties were evaluated. Chemical composition (moisture, protein, carbohydrate and ash) and antioxidant profile (DPPH and ABTS radical scavenging, contents of total polyphenolics, flavonoids and anthocyanins) of control and fortified cookies was determined. Sensory evaluation was done by a panel of 10 tasters, using 9-point hedonic test. It was observed that DPPH radical scavenging activity in the fortified cookies was significantly improved, probably due to incorporation of less polar phytochemicals. This was substantiated by the fact that flavonoid and anthocyanin contents were also significantly increased in the fortified cookies. Maximum limit of fortification was 50% for juice and 10% for peel powder as sensorial parameters deteriorated beyond such limits. The study indicated that addition of pomegranate peel powder or juice in cookies preparation could enhance its nutritional quality without affecting the rheological, sensorial and antioxidant properties.

YEAR: 2015

https://zumodegranada.com/en/antioxidant-profile-of-cookies-fortified-with-juice-and-peel-of-fresh-pomegranate/

Protection against Oxidative Damage in Human Erythrocytes and Preliminary Photosafety Assessment of Pomegranate

Protection against Oxidative Damage in Human Erythrocytes and Preliminary Photosafety Assessment of Pomegranate

The main purpose of the present study is to evaluate the ability of nanoemulsion entrapping pomegranate peel polyphenol-rich ethyl acetate fraction (EAF) prepared from pomegranate seed oil and medium chain triglyceride to protect human erythrocyte membrane from oxidative damage and to assess preliminary *in vitro* photosafety.

RESEARCH TITLE: Protection against Oxidative Damage in Human Erythrocytes and Preliminary Photosafety Assessment of *Punica granatum* Seed Oil Nanoemulsions Entrapping Polyphenol-rich Ethyl Acetate Fraction

COUNTRIES: Spain; Brazil

CONDUCTED BY: Departament de Fisiologia, Facultat de Farmàcia, Universitat de Barcelona, Spain; Programa de Pós-Graduação em Farmácia, Centro de Ciências da Saúde, Universidade Federal de Santa Catarina, Campus Universitário Trindade, Brazil.

PUBLISHED ON: Toxicology in Vitro

RESEACH:

The main purpose of the present study is to evaluate the ability of nanoemulsion entrapping pomegranate peel polyphenol-rich ethyl acetate fraction (EAF) prepared from pomegranate seed oil and medium chain triglyceride to protect human erythrocyte membrane from oxidative damage and to assess preliminary *in vitro* photosafety. In order to evaluate the phototoxic effect of nanoemulsions, human red blood cells (RBCs) are used as a biological model and the rate of haemolysis and photohaemolysis (5 J cm^{-2}UVA) is assessed *in vitro*. The level of protection against oxidative damage caused by the peroxyl radical generator AAPH in human RBCs as well as its effects on bilayer membrane characteristics such as fluidity, protein profile and RBCs morphology are determined. EAF-loaded nanoemulsions do not promote haemolysis or photohaemolysis. Anisotropy measurements show that nanoemulsions significantly retrain the increase in membrane fluidity caused by AAPH. SDS-PAGE analysis reveal that AAPH induced degradation of membrane proteins,

but that nanoemulsions reduce the extend of degradation. Scanning electron microscopy examinations corroborate the interaction between AAPH, nanoemulsions and the RBCs membrane bilayer. Our work demonstrates that *P. granatum* nanoemulsions are photosafe and protect RBCs against oxidative damage and possible disturbance of the lipid bilayer of biomembranes. Moreover it suggests that these nanoemulsions could be promising new topical products to reduce the effects of sunlight on skin.

YEAR: 2015

https://zumodegranada.com/en/protection-against-oxidative-damage-in-human-erythrocytes-and-preliminary-photosafety-assessment-of-pomegranate/

Evaluation of Total Phenolic Content, Total Antioxidant Activity, and Antioxidant Vitamin Composition of Pomegranate Seed and Juice

Evaluation of Total Phenolic Content, Total Antioxidant Activity, and Antioxidant Vitamin Composition of Pomegranate Seed and Juice

This study aimed to determine total phenolic content (TPC), total antioxidant activity (TAA), antioxidant vitamin composition (A, C, and E) of pomegranate fruit.

RESEARCH TITLE: Evaluation of Total Phenolic Content, Total Antioxidant Activity, and Antioxidant Vitamin Composition of Pomegranate Seed and Juice

COUNTRIES: Malaysia

CONDUCTED BY: Department of Nutrition and Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Selangor, Malaysia;

PUBLISHED ON: OMICS

RESEACH:

Abstract

This study aimed to determine total phenolic content (TPC), total antioxidant activity (TAA), antioxidant vitamin composition (A, C, and E) of pomegranate fruit. In addition, two edible parts of pomegranate juice, pomegranate seed, and combination of them were compared based on antioxidant properties. TPC was determined by using Folin-Ciocalteu (FC) method based on colorimetric reduction. Ferric reduction ability power (FRAP assay) was used to test the antioxidant activity. Vitamin assessments were conducted by using high performance liquid chromatography (HPLC). Results for antioxidant vitamin composition in pomegranate juice (PJ) showed that the concentration of vitamin A was 22.8 ± 0.69 µg/100 g, vitamin C was 57.8 ± 0.59 mg/100 g, and vitamin E was 0.07 ± 0.01 mg/100 g. Besides, TPC in PJ, pomegranate seed (PS), and pomegranate seed-juice (PSJ) was 2502 ± 54, 165 ± 49, and 2696 ± 49 mg GAE/L, and TAA was 32 ± 5.1, 20 ± 2.8, and 47 ± 5.5 mmol/L respectively. This study revealed that PSJ contained high level of phenolic compounds, antioxidant activity, and vitamin C. In addition, TPC was as main contributor to antioxidant activities, and positively correlated with TAA (r^2=0.91, <0.05)

Conclusions

These findings suggested that pomegranate seed-juice has high level of phenolic content and antioxidant activity, which were positively correlated. Moreover, pomegranate juice could be acomplementary source of vitamin C and A. In addition, the result concluded that the combination of seed and juice have higher antioxidant activity than two other parts (seed and juice) separately. Therefore, pomegranate seed-juice has possessed a potential source of natural antioxidant; which can be used as treatment for chronic diseases relative to overproduction of free radicals. Therefore, combination of pomegranate seed and juice may become an alternative and potential source of natural antioxidant; which can be used as treatment for chronic diseases relative to overproduction of free radicals.

YEAR: 2015

https://zumodegranada.com/en/evaluation-of-total-phenolic-content-total-antioxidant-activity-and-antioxidant-vitamin-composition-of-pomegranate-seed-and-juice/

Pomegranate Juice Increase Memory

Pomegranate Juice Increase Memory

Despite increasing emphasis on the potential of dietary antioxidants in preventing memory loss and on diet as a precursor of neurological health, rigorous studies investigating the cognitive effects of foods and their components are rare.

Recent animal studies have reported memory and other cognitive benefits of polyphenols, found abundantly in pomegranate juice.

RESEARCH TITLE: Pomegranate Juice Augments Memory and fMRI Activity in Middle-Aged and Older Adults with Mild Memory Complaints

COUNTRIES: USA

CONDUCTED BY: Center for Cognitive Neurosciences, Department of Psychiatry and Biobehavioral Sciences and Semel Institute for Neuroscience and Human Behavior, University of California, Los Angeles, Los Angeles, USA; Center for Human Nutrition, David Geffen School of Medicine, and the UCLA Longevity Center, University of California, Los Angeles, USA.

PUBLISHED ON: Evidence-Based Complementary and Alternative Medicine

RESEACH:

Abstract

Despite increasing emphasis on the potential of dietary antioxidants in preventing memory loss and on diet as a precursor of neurological health, rigorous studies investigating the cognitive effects of foods and their components are rare. Recent animal studies have reported memory and other cognitive benefits of polyphenols, found abundantly in pomegranate juice. We performed a preliminary, placebo-controlled randomized trial of pomegranate juice in older subjects with age-associated memory complaints using memory testing and functional brain activation (fMRI) as outcome measures. Thirty-two subjects (28 completers) were randomly assigned to drink 8 ounces of either pomegranate juice or a flavor-matched placebo drink for 4 weeks. Subjects received memory testing, fMRI scans during cognitive tasks, and blood draws for peripheral biomarkers before and after the intervention. Investigators and subjects were all blind to group membership. After 4 weeks, only the pomegranate group showed a significant improvement in the Buschke selective reminding test of verbal memory and a significant increase in plasma trolox-equivalent antioxidant capacity (TEAC) and urolithin A-glucuronide.

Furthermore, compared to the placebo group, the pomegranate group had increased fMRI activity during verbal and visual memory tasks. While preliminary, these results suggest a role for pomegranate juice in augmenting memory function through task-related increases in functional brain activity.

YEAR: 2013

https://zumodegranada.com/en/pomegranate-juice-increase-memory/

Pomegranate Juice for the Management of Cardiovascular Health

Pomegranate Juice for the Management of Cardiovascular Health

Results of the study showed that ideal cardiovascular health, was rare among young participants of the study. An amazingly low (only 1%) percentage of the participants had all 7 health metrics in the 5,785 young adults participating from all international cohorts. Many of the participants had ideal glucose (73%), cholesterol (64%), and were non-smokers (64%); diet (7%) was the least common metric for participants from any of the cohorts.

The lowest prevalence of a clinical cardiovascular disease risk factor from the life's 7 simple was blood pressure ; this was normal in only 52% of the participants. The Nationaland Nutrition Examination Surveys (NHANES) 2003-2008 evaluated the prevalence of the 7cardiovascular health metrics in 14,515 adults.

RESEACH TITLE: No-Pharmacological Intervention: Pomegranate Juice for the Management of Hypertension and the Improvement of Cardiovascular Health

COUNTRY: Greece and USA

CONDUCTED BY: George Washington University and Aristotle University of Thessaloniki

PUBLISHED ON: The Open Hypertension Journal

RESEACH:

The concept of ideal cardiovascular (CV) health, with emphasis on the prevention of CV disease (CVD), was included by the American Heart Association (AHA) among its strategic goals for 2020 [1]. This concept was intended to focus mainly on the promotion of a healthy lifestyle and the adoption of a multifactorial intervention with nonpharmacological or pharmacological means, aiming at the prevention or the effective control of CVD risk factors [1]. Ideal cardiovascular health is defined as optimal levels of 3 CVD risk factors [blood pressure (BP), fasting plasma glucose and total cholesterol) and 4 behaviours [body mass index (BMI), smoking, physical activity and healthy diet] [1]. These 7 ideal CV metrics, called life's simple 7, are probably the best available markers of life-time CVD risk [2]. Recent studies have shown that the levels of ideal CV health in the United States to be very low at a community level [3-5] and to be associated with cardiac events [3], stroke [2] and total mortality [6]. A large study was conducted in 5,785 young adults (20-39 years old) from 5 international populations: the Minneapolis Childhood Cohort

Study, the Princeton Follow-up Study, the Bogalusa Heart Study, the Cardiovascular Risk in Young Finns Study, and the Childhood Determinants of Adult Health (CDAH) Study; all members of the International Childhood Cardiovascular Cohort (i3C) Consortium [7]. Results of the study showed that ideal CV health, as defined by the AHA, was rare among young participants of the study. An amazingly low (only 1%) percentage of the participants had all 7 health metrics in the 5,785 young adults participating from all international cohorts [7]. Many of the participants had ideal glucose (73%), cholesterol (64%), and were non-smokers (64%); diet (7%) was the least common metric for participants from any of the cohorts [7]. The lowest prevalence of a clinical CVD risk factor from the life's 7 simple was BP; this was normal in only 52% of the participants [7]. The Nationaland Nutrition Examination Surveys (NHANES) 2003-2008 evaluated the prevalence of the 7 CV health metrics in 14,515 adults [8]. Participants were stratified in young (20-39 years), middle-aged (40-64 years) and elderly (65 years).

Beyond hypertension, oxidative stress is also causally related with several CVD risk factors such as diabetes, dyslipidaemia, metabolic syndrome and smoking; oxidative stress has been proved to play a key role in the pathogenesis of atherosclerosis [33]. Oxidized LDL (Ox-LDL) is present in atherosclerotic lesions and in plasma from patients with CVD, and it correlates with the presence of angiographically documented complicated plaques [33], thus identifying patients who are at increased risk for future myocardial infarction, independently of other risk factors [34]. Since Pomegranate Juice contains very potent antioxidants (tannins, anthocyanins), which are also considered potent anti-atherogenic agents, it might attenuate atherosclerosis development by reducing oxidative stress in these patients [34]. Indeed, human plasma obtained from healthy subjects after 2 weeks of Pomegranate Juice consumption (50 mL Pomegranate Juice concentrate/day, equivalent to 1.5 mmol total polyphenols) demonstrated a significantly decreased susceptibility to free radical-induced lipid peroxidation, in comparison to plasma obtained at baseline prior to Pomegranate Juice consumption initiation, as measured by lipid peroxides formation or by total antioxidant status in serum [31,35]. Very recently, a study evaluated a product a new functional beverage based on a de-alcoholized red wine matrix supplemented by a pomegranate extract. This product is expected to have even more potent antioxidant action [36].

Regarding patients with metabolic syndrome (one of the components of which is hypertension), it has been demonstrated that Pomegranate Juice exerts hypoglycaemic effects by increasing insulin sensitivity, inhibiting -glucosidase, and modulating glucose transporter type-4 function, but also lowers total cholesterol and exerts anti-inflammatory effects through the regulation of peroxisome proliferator-activated receptor pathways [37].

In conclusion, current data suggest that long-term (at least for 1 year) use of Pomegranate Juice has a beneficial effect on BP, improves endothelial function, reduces arterial stiffness and delays or reverses the progression of atherosclerosis. These effects could result in an improvement in CV and overall health status. Therefore, pomegranate Juice might be useful as an adjunctive therapy for the management of hypertension on top of other non-pharmacological interventions or drug therapy. The use of pomegranate Juice might reduce the number of drugs or their doses for patients requiring antihypertensive drug therapy. Pomegranate Juice might be more useful in patients with hypertension and high oxidative burden such as those with diabetes, obesity, metabolic syndrome or who smoke. However, our knowledge on the CV effects of Pomegranate Juice are based on studies with a small number of patients and limitations in their design. Therefore, future long-term well-designed studies with polyphenols-rich foods (alone or in combination), but also with isolated phenolic compounds would provide valuable data to establish public health recommendations on the use of polyphenols forhealth protection.

YEAR: 2013

https://zumodegranada.com/en/pomegranate-juice-for-the-management-of-cardiovascular-health/

Effects of pomegranate juice on blood pressure in hypertensive individuals

Effects of pomegranate juice on blood pressure in hypertensive individuals

Pomegranate juice is rich in bioactive phytochemicals with antioxidant, and anti-inflammatory and cardioprotective functions. The present trial investigated the acute effects of Pomegranate juice consumption on blood pressure and markers of endothelial function.

Consumption of Pomegranate juice could be considered in the context of both dietary and pharmacological interventions for hypertension.

RESEACH TITLE: Clinical investigation of the acute effects of pomegranate juice on blood pressure and endothelial function in hypertensive individuals

COUNTRY: Iran

CONDUCTED BY: University of Medical Sciences, Iran.Professor, Isfahan Cardiovascular Research Center, Isfahan Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Iran

PUBLISHED ON: Arya atherosclerosis

RESEACH:

Background

Pomegranate juice is rich in bioactive phytochemicals with antioxidant, and anti-inflammatory and cardioprotective functions. The present trial investigated the acute effects of Pomegranate juice consumption on blood pressure and markers of endothelial function.

Methods

In this single-arm study, thirteen hypertensive men aged 39-68 years were recruited. Included subjects were assigned to natural Pomegranate juice (150 ml/day) following a 12 hour fast. Systolic blood pressure (SBP), diastolic blood pressure (DBP), and flow-mediated dilation (FMD), along with serum concentrations of C-reactive protein (CRP), intracellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule 1 (VCAM-1), E-selectin and interleukin-6 (IL-6) were measured at baseline and 4-6 hours after Pomegranate juice consumption.

Results

Comparison of pre- vs. post-trial values revealed a significant reduction in both SBP (7%; P = 0.013) and DBP (6%; P < 0.010). However, changes in FMD (20%) as well as circulating levels of CRP, ICAM-1, VCAM-1, E-selectin, and IL-6 did not reach statistical significance (P = 0.172).

Conclusion

Pomegranate juice has promising acute hypotensive properties. Consumption of Pomegranate juice could be considered in the context of both dietary and pharmacological interventions for hypertension.

YEAR: 2013

https://zumodegranada.com/en/effects-of-pomegranate-juice-on-blood-pressure-in-hypertensive-individuals/

https://zumodegranada.com/en/pomegranate-juice/

Pomegranate Juice

Antimicrobial Effect of Pomegranate Juice on Listeria innocua and Escherichia coli

Antimicrobial Effect of Pomegranate Juice on Listeria innocua and Escherichia coli

The edible part of pomegranates (*Punica granatum* L.) contains organic acids, sugars, vitamins, polysaccharides, polyphenols and minerals with unique flavor, taste and heath promoting characteristics. Natural antimicrobials developed from pomegranates (seeds and peel) have potential application in food preservatives.

This study provides useful information on potential application of pomegranates or pomegranate extracts as food additives in food systems.

RESEARCH TITLE: Antimicrobial Effect of Pomegranate Juice on *Listeria innocua* and *Escherichia coli* in Different Culture Systems

COUNTRIES: China and Canadá

CONDUCTED BY: Zhaojun Ban, Xinjiang Agricultural University, Urumqi, China; Lihua Fan, Agriculture and Agri-Food Canada, Kentville, Canada; Craig Doucette, Agriculture and Agri-Food Canada, Kentville, Canada; Timothy Hughes, Agriculture and Agri-Food Canada, Kentville, Canada; Sherry Fillmore, Agriculture and Agri-Food Canada, Kentville, Canada; Junfeng Guan, Hebei Academy of Agriculture and Forestry Sciences, Shijiazhuang, China; Jiang Li, Xinjiang Agricultural University, Urumqi, China.

PUBLISHED ON: International Association for Food Protection

RESEACH:

Introduction: The edible part of pomegranates (*Punica granatum* L.) contains organic acids, sugars, vitamins, polysaccharides, polyphenols and minerals with unique flavor, taste and heath promoting characteristics. Natural antimicrobials developed from pomegranates (seeds and peel) have potential application in food preservatives.

Purpose: The objective of this study was to investigate the antimicrobial effects of pomegranate juice at different concentration against *Listeria innocua* and *Escherichia coli*.

Methods: The experiments were conducted in the distilled water (DW) and bacterial culture broth systems. *L. innocua* or *E. coli* at 10^5 CFU/ml was inoculated into sterile test tubes containing five different concentrations of pomegranate juice and then incubated at 4, 25 or 37°C, respectively. The bacterial population and pH value were monitored at 0, 6, 24 and 48 h.

Results: The antimicrobial effects of pomegranate juice were dependent upon the concentrations of juice, culture conditions (temperature, time and matrix), as well as bacteria species tested. Overall, increased juice concentration and incubation temperature resulted in increased antibacterial effects. Both bacterial species were more effectively killed in DW system than in culture broth, while *L. innocua* was more sensitive to pomegranate juice compared with *E. coli*. In DW system, pomegranate juice regardless of concentrations reduced the population of *L. innocua* to undetectable levels at 4, 25 or 37°C for 48 h while *E. coli* was reduced by 3.6 log when treated with 10% juice at 37°C for 48 h. The population of *L. innocua* and *E. coli* were also significantly inhibited by 20% pomegranate juice ($P < 0.05$) in the culture broth system at 37°C for 48 h. By monitoring the pH changes, it was suggested that both high acidity and polyphenols in pomegranate juice contributed to the antimicrobial effect.

Significance: This study provides useful information on potential application of pomegranates or pomegranate extracts as food additives in food systems.

YEAR: 2015

https://zumodegranada.com/en/antimicrobial-effect-of-pomegranate-juice-on-listeria-innocua-and-escherichia-coli/

Triclosan administration and the possible protective role of pomegranate juice

Triclosan administration and the possible protective role of pomegranate juice

The study aimed to elucidate the impact of Triclosan on the histological structure of the seminiferous tubules (STs) in adult male albino rats, as well as the possible protective role of pomegranate juice coadministration.

The study clearly indicates that Triclosan has the potential to adversely impact the testicular structure and function, and that Pomegranate Juice is able to ameliorate such adverse effects.

RESEARCH TITLE: Histological study of adult male rat seminiferous tubules following triclosan administration and the possible protective role of pomegranate juice

COUNTRY: Egypt

PUBLISHED ON: The Egyptian Journal of Histology

RESEACH:

Introduction: Triclosan (TCS) is an antimicrobial agent, widely incorporated in a variety of personal care products, household items, medical devices, and clinical settings. Recently, concern has been raised over TCS's potential for endocrine and reproductive disruption.

Aim: The study aimed to elucidate the impact of Triclosan on the histological structure of the seminiferous tubules (STs) in adult male albino rats, as well as the possible protective role of pomegranate juice coadministration.
Materials and methods: A total of 32 adult male albino rats (140–160 g) were randomly categorized into four equal groups. Group I (the control group): rats in this group received PBS (1 ml/kg/day) orally. Group II: rats in this group received PJ orally at a dose of 10 ml/kg/day. Group III: rats in this group received TCS orally at a dose of 20 mg/kg/day. Group IV: rats in this group received TCS at the same dose as group III in conjunction with PJ daily. The experiment continued for 60 days. At the end of the experiment, blood samples were collected from the retro-orbital venous plexus of all rats for estimation of serum testosterone level. The animals were then euthanized. The testes of all rats were harvested for both light and transmission electron microscopic examination of the STs. The germinal

epithelial height and the number of germ cells/high-power field (HPF) were estimated morphometrically in H&E-stained sections and statistically analyzed.

Results: The study revealed that Pomegranate Juice administration was safe as it did not alter serum testosterone levels as compared with the control group. Histologically, the STs of these animals exhibited normal appearance similar to that of the control group. TCS administration was associated with significantly lowered serum testosterone levels as compared with the control group. Histologically, the STs were lined with relatively few spermatogenic cells with deeply stained nuclei. Cytoplasmic vacuolation of the lining cells and exfoliation of germ cells in the tubular lumina were seen as well. Ultrastructurally, vacuolar degenerative changes involving all types of spermatogenic cells as well as Sertoli cells were revealed. Moreover, the germinal epithelial height and the number of germ cells/HPF were significantly reduced compared with the control group. Coadministration of PJ with TCS resulted in a significant increase in serum testosterone level as compared with the TCS group. Histologically, most of the STs retained normal appearance and epithelial stratification. Only some tubules revealed vacuolation of germ cells in the basal compartment with deeply stained nuclei. Mild ultrastructural alterations of germ cells were evidenced as well. These results were confirmed histomorphometrically by the significant increase in the germinal epithelial height and number of germ cells/HPF as compared with the TCS group.

Conclusion: The study clearly indicates that TCS has the potential to adversely impact the testicular structure and function, and that Pomegranate Juice is able to ameliorate such adverse effects.

YEAR: 2014

https://zumodegranada.com/en/triclosan-administration-and-the-possible-protective-role-of-pomegranate-juice/

Olive in the Management of Hyperglycemia

Olive in the Management of Hyperglycemia

Postprandial hyperglycemia indicates the abnormality in glucose turnover leading to the onset of type 2 diabetes. Therefore, correction of postprandial hyperglycemia is crucial in the early stage of diabetes therapy.

RESEACH TITLE: Efficacy and Safety of Olive in the Management of Hyperglycemia

COUNTRY: Morocco

CONDUCTED BY: Faculty of Sciences and Techniques Errachidia, Moulay Ismail University, Morocco

PUBLISHED BY: Pharmaceutical Regulatory Affairs

RESEACH: Postprandial hyperglycemia indicates the abnormality in glucose turnover leading to the onset of type 2 diabetes. Therefore, correction of postprandial hyperglycemia is crucial in the early stage of diabetes therapy. One of the most effective strategies to control postprandial hyperglycemia is medication combined with intake restriction and an exercise program. However, along with the prevalence of chronic diseases with multi-pathogenic factor, drugs with single chemical composition are usually not effective. In this view, phytotherapy has a promising future in the management of diabetes, considered to have less side effects as compared to synthetic drugs. The World Health Organization estimates that in developing countries about 80% of the population now still depend on herbal treatment. Olive (Olea europea) (OE) has been used in traditional remedies in Europe and Mediterranean countries as a food and medicine for over 5,000 years especially for the prevention and treatment of chronic diseases such as hypertension, atherosclerosis , cancer and diabetes. In addition, olive is considered as the most important component of the Mediterranean diet with many health benefits. Several experimental studies have demonstrated the beneficial effect of OE on diabetes. This effect has been demonstrated in the animal models such as streptozotocin-induced diabetic rats, alloxaninduced diabetic rats and obese diabetic sand rats fed a hypercaloric diet. In these models olive extracts have been shown to exhibit a significant reduction on both blood glucose and insulin levels. Few randomized clinical trials have demonstrated the beneficial effect of olive and one study has shown that the subjects treated with olive leaf extract exhibited significantly lower Glycated hemoglobin (HbA1c) and fasting plasma insulin levels. Another study performed in recent onset type 2 diabetic patients has revealed that OE

leaves exhibited antidiabetic activity when it added as a mixture of extract of leaves of Juglans regia, Urtica dioica and Atriplex halimus. The underlying mechanism seems to be the improvement of glucose uptake and no side effect was reported while extracts from OE have been found to exhibit cytotoxic effects only at concentrations higher than 500 µg/ mL in cells from the liver hepatocellular carcinoma cell line (HepG2) and cells from the rat L6 muscle cell line. As far as the phytochemical analysis is concerned, it is now well-established that major fatty acid constituents and minor phenolic components in olives and olive oil exert important health benefits particularly for cardiovascular diseases, metabolic syndrome and inflammatory conditions. Hydroxytyrosol and oleuropein are considered as major polyphenolic compounds in olive leaf. Oleuropeoside, a phenylethanoid isolated from OE demonstrated a significant hypoglycemic activity in alloxan-induced diabetes and the hypoglycemic activity of this compound may result from both the increased peripheral uptake of glucose and potentiation of glucose-induced insulin secretion. In addition, Maslinic acid (MA), a natural triterpene from OE with hypoglycemic activity is a wellknown inhibitor of glycogen phosphorylase in diabetic rats without affecting hematological, histopathologic and biochemical variables, thus suggesting a sufficient margin of safety for its putative use as a nutraceutical. More recently a study has showed that MA exerts antidiabetic effects by increasing glycogen content and inhibiting glycogen phosphorylase activity in HepG2 cells. Furthermore, MA was shown to induce the phosphorylation level of insulin-receptor β-subunit, protein kinase B (Akt) and glycogen synthase kinase-3β. MA treatment of mice fed with a high-fat diet reduced the model-associated adiposity, mRNA expression of proinflammatory cytokines and then insulin resistance, and increased the accumulated hepatic glycogen. Finally, a recent clinical study has revealed that supplementation with olive leaf polyphenols significantly improved insulin sensitivity and pancreatic β-cell secretory capacity in overweight middle-aged men at risk of developing the metabolic syndrome. In conclusion, OE has been and continue to represent a natural source of phytocompounds eliciting a beneficial effect in human health especially in the management of hyperglycemia [1-15].

YEAR: 2015

https://zumodegranada.com/en/olive-in-the-management-of-hyperglycemia/

Pomegranate juice protective against macrophage atherogenecity

Pomegranate juice protective against macrophage atherogenecity

We studied the model system of high- vs. low-capacity runner (HCR vs. LCR) to question the atherogenic properties (oxidative stress, triglycerides and cholesterol metabolism) in the macrophages, serum, liver and heart. Half of the LCR or HCR consumed pomegranate juice (pomegranate juice 15 μmol of gallic acid equivalents/rat/day) for 3 weeks and were compared to placebo-treated rats.

We conclude that HCR vs. LCR rats demonstrate reduced atherogenicity, mostly in their macrophages pomegranate juice exerts a further improvement, mostly in macrophages from LCR rats.

RESEARCH TITLE: High intrinsic aerobic capacity and pomegranate juice are protective against macrophage atherogenecity: studies in high- vs. low-capacity runner (HCR vs. LCR) rats.

COUNTRIES: Israel, USA

CONDUCTED BY: The Lipid Research Laboratory, Rambam Health Care Campus, The Rappaport Faculty of Medicine and Research Institute, Technion–Israel Institute of Technology, Haifa, Israel; Department of Physiology and Biophysics, Technion Rappaport Faculty of Medicine, Haifa, Israel; Department of Anesthesiology, University of Michigan, Ann Arbor, USA.

PUBLISHED ON: The Journal of Nutritional Biochemistry

RESEACH:

We studied the rat model system of high- vs. low-capacity runner (HCR vs. LCR) rats to question the atherogenic properties (oxidative stress, triglycerides and cholesterol metabolism) in the rat macrophages, serum, liver and heart. Half of the LCR or HCR rats consumed pomegranate juice (pomegranate juice 15 μmol of gallic acid equivalents/rat/day) for 3 weeks and were compared to placebo-

treated rats. At the end of the study blood samples, peritoneal macrophages (RPM), livers, and hearts were harvested from the rats. RPM harvested from HCR vs. LCR demonstrated reduced cellular oxidation (21%), increased paraoxonase 2 activity (28%) and decreased triglycerides mass (44%). Macrophage uptake rates of fluorescein–isothiocyanate-labeled low-density lipoprotein (LDL) or oxidized LDL were significantly lower, by 37% or by 18%, respectively, in HCR vs. LCR RPM. Pomegranate juice consumption significantly decreased all the above atherogenic parameters with more substantial beneficial effects observed in the LCR vs. the HCR rats (~80% vs. ~40% improvement, respectively). Similar hypo-triglyceridemic pattern was noted in serum from HCR vs. LCR. In contrast to the above results, liver oxidation and triglycerides mass were both minimally increased in HCR vs. LCR rats by 31% and 28%, respectively. In the heart, lipid content was very low, and interestingly, an absence of any significant oxidative stress, along with modest triglyceride accumulation, was observed.

We conclude that HCR vs. LCR rats demonstrate reduced atherogenicity, mostly in their macrophages pomegranate juice exerts a further improvement, mostly in macrophages from LCR rats.

YEAR: 2015

https://zumodegranada.com/en/pomegranate-juice-protective-against-macrophage-atherogenecity-2/

Antenatal ingestion of pomegranate juice decreases hypoxia

Antenatal ingestion of pomegranate juice decreases hypoxia

Placental oxidative stress is associated with preterm birth, preeclampsia, and intrauterine growth restriction. Pomegranate juice is rich in polyphenols and has been shown effective in reducing oxidative stress and apoptosis in several systems.

Here, we tested the hypothesis that exposure of pregnant mice in hypoxia induces oxidative stress and apoptosis in the mouse placenta and that antepartum Pomegranate juice can limit these effects.

RESEARCH TITLE: Antenatal ingestion of pomegranate juice decreases hypoxia-induced oxidative stress and modulates apoptosis in mouse placenta

COUNTRIES: EEUU

CONDUCTED BY: Wash U School of Medicine, OBGYN, St Louis, MO

PUBLISHED ON: American Journal of Obstetrics and Ginecology

RESEARCH:

Objective

Placental oxidative stress is associated with preterm birth, preeclampsia, and intrauterine growth restriction. Pomegranate juice (PJ) is rich in polyphenols and has been shown effective in reducing oxidative stress and apoptosis in several systems. Here, we tested the hypothesis that exposure of pregnant mice in hypoxia induces oxidative stress and apoptosis in the mouse placenta and that antepartum Pomegranate juice can limit these effects.

Study Design

C57BL/6 pregnant mice were randomized to four groups: (1) exposure to FiO2=12% between E15.5 and E18.5 (HPX, n=3); (2) exposure to FiO2=20% between E15.5 and E18.5 with food restriction (N-FR, n=3); (3)

gavaged daily with 250 µl of PJ between E12.5 and E17.5, with E12.5 to E15.5 in FiO2=20% and E15.5 to E18.5 in FiO2=12% (PJ, n=6); (4) gavaged daily with 250 µl of 13% glucose solution between E12.5 and E17.5, with E12.5 to E15.5 in FiO2=20% and E15.5 to E18.5 in FiO2=12% (Glucose, n=6). Half of each placenta was either formalin fixed for morphology or protein extracted for western immunoblotting. HSP90, an oxidative stress marker, was quantified by immunoblotting and visualized by immunohistochemistry. Apoptosis was assayed by expression of cleaved caspase 3 and by TUNEL staining.

Results

Exposure of pregnant mice to FiO2=12% induced oxidative stress and enhanced apoptosis in mouse placentas, as measured by HSP90 and cleaved caspase 3, respectively. The cross-sectional surface areas of the placental junctional zones of the HPX mice were larger than those from the N-FR mice. Supplementation with Pomegranate juice decreased hypoxia-induced oxidative stress in both the junctional zone and labyrinth, reduced the cross-sectional surface area of the junctional zone, and lowered the level apoptosis in the labyrinth while increasing apoptosis in the junctional zone.

Conclusion

Supplementation of pomegranate juice in pregnant mice reduces hypoxia-induced oxidative stress while differentially modulating apoptosis in the two components of the mouse placenta.

YEAR: 2015

https://zumodegranada.com/en/antenatal-ingestion-of-pomegranate-juice-decreases-hypoxia-2/

Antibacterial activity of fresh pomegranate juice

Antibacterial activity of fresh pomegranate juice

Polyphenols have received a great deal of attention due to their biological functions. Pomegranate (*Punica granatum* L.) is a polyphenol-rich fruit. In the past decade, studies testing the antimicrobial activity of pomegranates almost exclusively used solvent extracts instead of fresh pomegranate juice.

The use of fresh pomegranate juice instead of solvent extracts would reduce toxicity issues while increasing patient acceptance. We established a model to test pomegranate juice as a natural antimicrobial agent.

RESEARCH TITLE: Antibacterial activity of fresh pomegranate juice against clinical strains of *Staphylococcus epidermidis*

COUNTRIES: Mexico, USA

CONDUCTED BY: Área Académica de Nutrición, Instituto de Ciencias de la Salud, Universidad Autónoma del Estado de Hidalgo, Hidalgo, Mexico; Dale Bumpers National Rice Research Center, Stuttgart, AR, USA; 3Departamento de Microbiología, Escuela Nacional de Ciencias Biológicas del Instituto Politécnico Nacional, Mexico City, Mexico

PUBLISHED ON: Food and Nutrition

RESEARCH:

Background: Polyphenols have received a great deal of attention due to their biological functions. Pomegranate (*Punica granatum* L.) is a polyphenol-rich fruit. In the past decade, studies testing the antimicrobial activity of pomegranates almost exclusively used solvent extracts instead of fresh pomegranate juice (FPJ). The use of fresh pomegranate juice instead of solvent extracts would reduce toxicity issues while increasing patient acceptance. We established a model to test pomegranate juice as a natural antimicrobial agent.

Objective: To evaluate the antimicrobial activity of pomegranate juice on clinical isolates of multidrug-resistant *Staphylococcus epidermidis* strains.

Design: Sixty strains of *S. epidermidis* isolated from ocular infections were grown in the presence of pomegranate juice, and minimum inhibitory concentration (MIC) was determined by broth and agar dilution methods.

Results: pomegranate juice at 20% had a MIC equal to 100% ($MIC_{100\%}$) on all 60 strains tested. This inhibition of pomegranate juice was confirmed by the growth kinetics of a multidrug-resistant strain exposed to different concentrations of pomegranate juice. Additionally, the antimicrobial activity of pomegranate juice was compared against commercial beverages containing pomegranate: pomegranate juice had the highest polyphenol content and antioxidant capacity.

Conclusions: Overall, pomegranate juice had antimicrobial activity, which might be attributed to its high polyphenol content and antioxidant capacity.

The antimicrobial activity of pomegranate juice on pathogenic bacteria described here could provide an alternative natural antibacterial treatment, although further studies should be conducted on a wide variety of bacteria and direct relationships established between antimicrobial activity and polyphenols. Identification of the antimicrobial agents in pomegranate juice could also yield valuable information.

YEAR: 2015

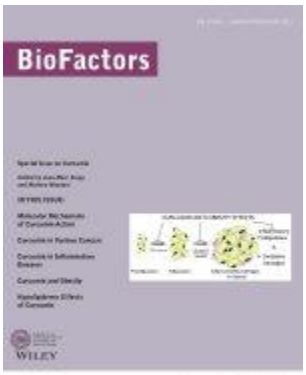
https://zumodegranada.com/en/antibacterial-activity-of-fresh-pomegranate-juice-2/

Pomegranate juice polyphenols induce a anti-inflammatory state

Pomegranate juice polyphenols induce a anti-inflammatory state

It was documented that pomegranate has anti-inflammatory effects. In this study, we investigated a direct effect of pomegranate juice and its polyphenols on macrophage inflammatory phenotype.

This study indicates that pomegranate juice consumption may inhibit the progressive proin- flammatory state in the aorta along atherosclerosis development with aging, due to a switch in macrophage phenotype from proinflammatory M1to anti-inflammatory M2.



RESEACH TITLE: Pomegranate juice polyphenols induce a phenotypic switch in macrophage polarization favoring a M2 anti-inflammatory state

COUNTRY: Israel

CONDUCTED BY: The Lipid Research Laboratory, Technion Faculty of Medicine, The Rappaport Family Institute for Research in the Medical Sciences, and Rambam Medical Center, Haifa, Israel

PUBLISHED ON: BioFactors

RESEACH: It was documented that pomegranate has anti-inflammatory effects. In this study, we investigated a direct effect of pomegranate juice and its polyphenols on macrophage inflammatory phenotype. In vitro, pomegranate juice and its major polyphenols dosedependently attenuated macrophage response to M1 proin- flammatory activation in J774.A1 macrophage-like cell line. This was evidenced by a significant decrease in TNFa and IL-6 secretion in response to stimulation by IFNc and Lipopolysaccharide. In addition, pomegranate juice and punicalagin dose-dependently promoted the macrophages toward a M2 anti-inflammatory phenotype, as determined by a

significant increase in the spontaneous secretion of IL-10. In mice, supplementation with dietary pomegranate juice substantially inhibited the M2 to M1macrophage phenotypic shift associated with age, toward a favorable antiinflammatory M2 phenotype. This effect was also reflected in the mice atherosclerotic plaques, as evaluated by the distinct expression of arginase isoforms. pomegranate juice consumption inhibited the increment of arginase II (Arg II, M1) mRNA expression during aging, and maintained the levels of Arg I (M2) expression similar to those in young mice aorta. This study demonstrates, for the first time, that pomegranate polyphenols directly suppress macrophage inflammatory responses and promote M1 to M2 switch in macrophage phenotype. Furthermore, this study indicates that pomegranate juice consumption may inhibit the progressive proin- flammatory state in the aorta along atherosclerosis development with aging, due to a switch in macrophage phenotype from proinflammatory M1to anti-inflammatory M2.

YEAR: 2015

https://zumodegranada.com/en/pomegranate-juice-polyphenols-induce-a-anti-inflammatory-state/

Antioxidant, antiproliferative and enzyme inhibiting activities of pomegranate

Antioxidant, antiproliferative and enzyme inhibiting activities of pomegranate

Pomegranate juice and related products have long been used either in traditional medicine or as nutritional supplements claiming beneficial effects. Although there are several studies on this food plant, only few works have been performed with pomegranate juice or marketed products. The aim of this work is to evaluate the antioxidant effects of pomegranate juice on cellular models using hydrogen peroxide as an oxidizing agent or DPPH and superoxide radicals in cell free systems.

This study reveals some mechanisms by which pomegranate juice may have interesting and beneficial effects in human health.

RESEACH TITLE: Bioactive properties of commercialised pomegranate (Punica granatum) juice: antioxidant, antiproliferative and enzyme inhibiting activities

COUNTRY: Spain, UK

CONDUCTED BY: Department of Pharmacy, Faculty of Health Sciences, San Jorge University, Zaragoza, Spain; Department of Pharmaceutical and Biological Chemistry, UCL School of Pharmacy, London, UK; adipocyte and Fat Biology Laboratory (AdipoFat), Unidad de Investigación Traslacional, Instituto Aragonés de Ciencias de la Salud (IACS), Hospital Universitario Miguel Servet, Zaragoza, Spain

PUBLISHED ON: Food and Function

RESEACH: Pomegranate juice and related products have long been used either in traditional medicine or as nutritional supplements claiming beneficial effects. Although there are several studies on this food plant, only few works have been performed with pomegranate juice or marketed products. The aim of this work is to evaluate the antioxidant effects of pomegranate juice on cellular models using hydrogen peroxide as an oxidizing agent or DPPH and superoxide radicals in cell free systems. The antiproliferative effects of the juice were measured on HeLa and PC-3 cells by the MTT assay and pharmacologically relevant enzymes (cyclooxygenases, xanthine oxidase, acetylcholinesterase and monoamine

oxidase A) were selected for enzymatic inhibition assays. Pomegranate juice showed significant protective effects against hydrogen peroxide induced toxicity in the Artemia salina and HepG2 models; these effects may be attributed to radical scavenging properties of pomegranate as the juice was able to reduce DPPH and superoxide radicals. Moderate antiproliferative activities in HeLa and PC-3 cancer cells were observed. However, pomegranate juice was also able to inhibit COX-2 and MAO-A enzymes. This study reveals some mechanisms by which pomegranate juice may have interesting and beneficial effects in human health.

RESEARCH SUMMARY: The antiproliferative effects of the juice were measured on HeLa and PC-3 cells by the MTT assay and pharmacologically relevant enzymes (cyclooxygenases, xanthine oxidase, acetylcholinesterase and monoamine oxidase A) were selected for enzymatic inhibition assays. Pomegranate juice showed significant protective effects against hydrogen peroxide induced toxicity in the Artemia salina and HepG2 models; these effects may be attributed to radical scavenging properties of pomegranate as the juice was able to reduce DPPH and superoxide radicals. Moderate antiproliferative activities in HeLa and PC-3 cancer cells were observed. However, pomegranate juice was also able to inhibit COX-2 and MAO-A enzymes. This study reveals some mechanisms by which pomegranate juice may have interesting and beneficial effects in human health.

YEAR: 2015

https://zumodegranada.com/en/antioxidant-antiproliferative-and-enzyme-inhibiting-activities-of-pomegranate/

Effect of pomegranate juice in young healthy males

Effect of pomegranate juice in young healthy males

Regular intake of pomegranate juice significantly modulates matrix metalloproteinases 2 and 9 and serum levels of some inflammatory factors and thus protects against exhaustive exercise-induced oxidative injury in young healthy males.

The blood levels of glutathione peroxidase and superoxide dismutase and serum levels of total antioxidant capacity after exhaustive exercise in the supplemented group were significantly increased ($p<0.05$), while the content of matrix metalloproteinases 2 and 9, ceruloplasmin and malondialdehyde showed a significant decrease in comparison to the control group ($p<0.05$). Besides, there were no significant changes in other biochemical factors.

RESEARCH TITLE: Effect of pomegranate juice supplementation on matrix metalloproteinases 2 and 9 following exhaustive exercise in young healthy males

COUNTRY: Iran

CONDUCTED BY: Department of Biochemistry and Nutrition, School of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran.

PUBLISHED ON: The Journal of the Pakistan Medical Association

RESEACH:

Objectives: To evaluate the efficacy of pomegranate juice supplementation on matrix metalloproteinases2 and 9 serum levels and improving antioxidant function in young healthy males during exhaustive exercise.
Methods: The study was conducted at Ardabil University of Medical Sciences, Iran, in 2010-11 and comprised 28 healthy subjects in 18-24 age bracket. They were randomly divided into control and supplemented groups. One cup of pomegranate juice and one cup of tap water were given to supplemented and control groups daily for two weeks respectively. Fasting blood samples were taken at baseline and at the end of two weeks of intervention. The subjects were given one exhaustive exercise and then fasting blood samples were taken for testing blood glutathione peroxidase and superoxide dismutase and serum levels of high sensitivity C-reactive protein, zinc, ceruloplasmin, matrix metalloproteinases 2 and 9, malondialdehyde and total antioxidant capacity. Data was analysed using descriptive statistical tests, paired and independent sample t-test.

Results: The blood levels of glutathione peroxidase and superoxide dismutase and serum levels of total antioxidant capacity after exhaustive exercise in the supplemented group were significantly increased ($p<0.05$), while the content of matrix metalloproteinases 2 and 9, ceruloplasmin and malondialdehyde showed a significant decrease in comparison to the control group ($p<0.05$). Besides, there were no significant changes in other biochemical factors.
Conclusion: Regular intake of pomegranate juice significantly modulates matrix metalloproteinases 2 and 9 and serum levels of some inflammatory factors and thus protects against exhaustive exercise-induced oxidative injury in young healthy males.

SUMMARY RESEACH: Regular intake of pomegranate juice significantly modulates matrix metalloproteinases 2 and 9 and serum levels of some inflammatory factors and thus protects against exhaustive exercise-induced oxidative injury in young healthy males.

YEAR: 2014

https://zumodegranada.com/en/effect-of-pomegranate-juice-in-young-healthy-males/

Pomegranate attenuates ureteral obstruction

Pomegranate attenuates ureteral obstruction

The results reported here indicate that pomegranate extract exerts a preventative effect on UUO-induced kidney damage in rats by reducing oxidative stress. We therefore propose that pomegranate extract supplementation therapy can be used for kidney protection in patients with UUO, such as ureteral stones. However, further animal and clinical studies are needed to confirm our suggestion.

WEB TITLE: Pomegranate attenuates ureteral obstruction

RESEACH TITLE: Pomegranate extract attenuates unilateral ureteral obstruction-induced renal damage by reducing oxidative stress.

COUNTRIES: Turkey

CONDUCTED BY: Study conducted at the Department of Urology, Okmeydani Training and Research Hospital, Istanbul, Turkey. Department of Urology, State Hospital Bayburt, Bayburt, Turkey. Department of Urology, University Medipol Istanbul, Istanbul, Turkey. Department of Urology, State Hospital Bahcelievler, Istanbul, Turkey. Department of Biochemistry, University of Kocaeli, Kocaeli, Turkey. Department of Pathology, Fatih Sultan Mehmet Training and Research Hospital, Istanbul, Turkey.

PUBLISHED ON: Urology Annals

RESEACH:

Abstract

Aims:

Ureteral obstruction may cause permanent kidney damage at late period. We know that the pomegranate extract (PE) play a strong role on removal of free oxygen radicals and prevention of oxidative stress. In the current study study, we evaluated the effect of PE on kidney damage after unilateral ureteral obstruction (UUO).

Settings and Design:

A total of 32 rats were divided into four groups. Group 1 was a control, Group 2 was a sham, Group 3 was rats with UUO and Group 4 was rats with UUO that were given PE (oral 100 µL/day). After 14 days, rats were killed and their kidneys were taken and blood analysis was performed.

Subjects and Methods:

Tubular necrosis, mononuclear cell infiltration, and interstitial fibrosis scoring were determined histopathologically in a part of kidneys; nitric oxide (NO), malondialdehyde (MDA), and reduced glutathione (GSH) levels were determined in the other part of kidneys.

Statistical Analysis Used:

Statistical analyses were performed by the Chi-square test and one-way analysis of variance.

Results:

There was no difference significantly for urea-creatinine levels between groups. Pathologically, there was serious tubular necrosis, mononuclear cell infiltration and fibrosis in Group 3, and there was significantly decreasing for tubular necrosis, mononuclear cell infiltration and fibrosis in Group 4 ($P < 0.005$). Furthermore, there was significantly increasing for NO and MDA levels; decreasing for GSH levels in Group 3 compared the other groups ($P < 0.005$).

Conclusions:

We think that the pomegranate extract prevents kidney damage by decreasing oxidative stress in kidney.

RESEACH SUMMARY:

The results reported here indicate that pomegranate extract exerts a preventative effect on UUO-induced kidney damage in rats by reducing oxidative stress. We therefore propose that pomegranate extract supplementation therapy can be used for kidney protection in patients with UUO, such as ureteral stones. However, further animal and clinical studies are needed to confirm our suggestion.

YEAR: 2015

https://zumodegranada.com/en/pomegranate-attenuates-ureteral-obstruction/

Pomegranate Juice

Pomegranate products (juice, pulp and peel extract) to study the stability and catabolism of phenolic compounds

Pomegranate products (juice, pulp and peel extract) to study the stability and catabolism of phenolic compounds

Pomegranate fruit contains a wide range of phenolic compounds that have been related to several health benefits. The stability of pomegranate phenols during digestion was tested by the application of *in vitro*gastrointestinal digestion (GID) to different pomegranate products: pomegranate juice (PJ), pulp (PP) and peel extract (PE). The resulting non-absorbable fractions were submitted to *in vitro* colonic fermentation with human faeces to monitor the generation of microbial metabolites.

During the duodenal step, we observed a low stability of anthocyanins and flavonoids and an important release of ellagic acid, especially after peel extract digestion. The poor potential absorption of the studied phenolic compounds led to their high exposure to colonic metabolism. After colonic fermentation, peel extract appeared to be the best source of microbial substrates leading to a larger generation of gut microbial catabolites in terms of absolute amounts. We suggest that using peel extract might be a good strategy to enrich food products with potential health benefits in the prevention of chronic diseases.

RESEACH TITLE: Application of in vitro gastrointestinal digestion and colonic fermentation models to pomegranate products (juice, pulp and peel extract) to study the stability and catabolism of phenolic compounds

COUNTRIES: Spain

CONDUCTED BY: Food Technology Department, Agrotecnio Research Center, University of Lleida, Spain

PUBLISED ON: Journal of Functional Foods

RESEACH: Pomegranate fruit contains a wide range of phenolic compounds that have been related to several health benefits. The stability of pomegranate phenols during digestion was tested by the application of *in vitro*gastrointestinal digestion (GID) to different pomegranate products: pomegranate juice (PJ), pulp (PP) and peel extract (PE). The resulting non-absorbable fractions were submitted to *in vitro* colonic fermentation with human faeces to monitor the generation of microbial metabolites. During the duodenal step, we observed a low stability of anthocyanins and flavonoids and an important release of ellagic acid, especially after peel extract digestion. The poor potential absorption of the studied phenolic compounds led to their high exposure to colonic metabolism. After colonic fermentation, peel extract appeared to be the best source of microbial substrates leading to a larger generation of gut microbial catabolites in terms of absolute amounts. We suggest that using peel extract might be a good strategy to enrich food products with potential health benefits in the prevention of chronic diseases.

YEAR: 2015

https://zumodegranada.com/en/pomegranate-products-juice-pulp-and-peel-extract-to-study-the-stability-and-catabolism-of-phenolic-compounds/

Anticancer activity of pomegranate fruit extract

Anticancer activity of pomegranate fruit extract

This study emphasizes the possibility of reduction of CA (Chromosome aberration) and thereby reducing carcinogenicity in people who consume pomegranate regularly. Hence the active ingredients of pomegranate fruits can be recommended for drug formulation.

RESEARCH TITLE: In vitro study on anticancer activity of pomegranate fruit extract in lymphocytes of breast cancer patients

WEB TITLE: Anticancer activity of pomegranate fruit extract

COUNTRIES: India

CONDUCTED BY: Department of Zoology, Avinashilingam Institute for Home Science and Higher Education for Women, Tamil Nadu, India

PUBLISHED ON: Journal of Pharmacy Research

RESEARCH:

Objective:

The focal aim of the present study was to investigate the antigenotoxic activities of Pomegranate Fruit Extract (PFE) in human lymphocytes of breast cancer patients in vitro. Methodology:Chromosome aberration (CA) assay were performed. Ten venous blood samples were collected from breast cancer patients who attended the Valavadi Narayanasamy Cancer Centre, G. Kuppusamy Naidu Memorial Hospital, Coimbatore. Four extracts were analyzed for the genotoxicity.

Results: Out of the four, methanol extract was found to reduce chromatid type aberration (CTA) and chromosome type aberration (CSA) (34.31±4.81) followed by chloroform extract (5.3 ±2.02). However, petroleum ether extract showed a minimum inhibition (2.9±1.03) and the percentage of inhibition with respect to water extract was found to be nil. The results indicates gradual decrease in the number of CTA in the experimental samples with methanolic extract (5.75 ± 1.5) when compared to control (8.75±3.59) (p=0.01). Meanwhile, CSA also found to reduce significantly in the experimental sample (3.25±1.5) compared to control samples (5.25±2.06) (p=0.01). When total CA (Chromosome aberration) was

taken into account, decrease in the experimental samples (9±2.45) compared to that of control samples (13.25±3.40) was found.

Conclusion: This study emphasizes the possibility of reduction of CA (Chromosome aberration) and thereby reducing carcinogenicity in people who consume pomegranate regularly. Hence the active ingredients of pomegranate fruits can be recommended for drug formulation.

Ten samples were collected from breast cancer patients. Pomegranate Fruit Extract treated blood samples (experimentals) and untreated blood samples (controls) were taken. Table I depicts the characteristics of the experimental and control group of samples, including age of the patients, stage and chromosomal alteration. Age of the patients ranged from 30 to 70 years. Samples collected with different stages of disease (breast cancer) namely stage I, stage II, stage III and stage IV. The total CA was found to be higher when the stage of cancer increased as shown in table I. The percentage inhibition of chromosomal alteration after the addition of methanol, chloroform, petroleum ether and water extracts of Punica granatum was found to be 0 – 34.31% as shown in table II. Treatments with methanol extract inhibited CA to 34.31± 4.81 followed by treatment with chloroform extract (5.3±2.02). Treatment with petroleum ether extract showed poor inhibition (2.92±1.03). Treatment with water extract showed no inhibition in the chromosomal alteration. Of the four treatments, maximum reduction in chromosomal alteration was found in the methanol extract (P=0.05) as shown in table II. However our results indicate reduction in the number of CTA in the experimental samples (5.75±1.5) than in the control samples (8.75±3.59). The result was found to be statistically significant at p=0.01. Correspondingly CSA was found to reduce significantly in the experimental samples treated with methanolic extract (3.25±1.5) than in control samples (5.25±2.06). Alike CTA and CSA the total CA was found to decrease in the experimental samples (9±2.45) when compared to that of control samples (13.25 ± 3.40) (p=0.01). Thus to conclude, Table III illustrates the reduction in CTA, CSA and total CA in the experimental samples treated with methanolic extract of pomegranate arils

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YEAR: 2015

https://zumodegranada.com/en/anticancer-activity-of-pomegranate-fruit-extract/

Daily consumption of pomegranate juice may improve stress-induced myocardial ischemia

Daily consumption of pomegranate juice may improve stress-induced myocardial ischemia

Effects of Pomegranate Juice Consumption on Myocardial Perfusion in Patients With Coronary Heart Disease.

Pomegranate juice contains antioxidants such as soluble polyphenols, tannins, and anthocyanins and may have antiatherosclerotic properties. However, no study has investigated the effects of pomegranate juice on patients who have ischemic coronary heart disease (CHD).

We investigated whether daily consumption of pomegranate juice for 3 months would affect myocardial perfusion in 45 patients who had CHD and myocardial ischemia in a randomized, placebo-controlled, double-blind study.

In conclusion, daily consumption of pomegranate juice may improve stress-induced myocardial ischemia in patients who have ischemic coronary heart disease.

The American Journal of Cardiology , volume 96, Issue 6, 15

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https://zumodegranada.com/en/daily-consumption-of-pomegranate-juice-may-improve-stress-induced-myocardial-ischemia-in-patients-who-have-ischemic-coronary-heart-disease/

The polyphenolic phytochemicals in the pomegranate can play an important role in the modulation of inflammatory cell

The polyphenolic phytochemicals in the pomegranate can play an important role in the modulation of inflammatory cell

Pomegranate juice, total pomegranate ellagitannins, and punicalagin suppress inflammatory cell signaling in colon cancer cells.

Phytochemicals from fruits such as the pomegranate (Punica granatum L) may inhibit cancer cell proliferation and apoptosis through the modulation of cellular transcription factors and signaling proteins. In previous studies, pomegranate juice (PJ) and its ellagitannins inhibited proliferation and induced apoptosis in HT-29 colon cancer cells.

Therefore, the polyphenolic phytochemicals in the pomegranate can play an important role in the modulation of inflammatory cell signaling in colon cancer cells.

J. Agric. Food Chem.

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https://zumodegranada.com/en/the-polyphenolic-phytochemicals-in-the-pomegranate-can-play-an-important-role-in-the-modulation-of-inflammatory-cell-signaling-in-colon-cancer-cells/

Neuroprotective Role of Pomegranate Juice

Neuroprotective Role of Pomegranate Juice

The present results show that, pomegranate juice has a neuroprotective effect against Alzheimer's like disease induced by aluminum chloride. Ingestion of pomegranate juice improves learning and memory in rodents. Further studies are needed to clarify the exact mechanism of action of pomegranate in the brain tissue to determine the neuroprotective effect of pomegranate.

WEB TITLE: Neuroprotective Role of Pomegranate Juice

RESEACH TITLE: Possible Neuroprotective Role of Pomegranate Juice in Aluminum Chloride Induced Alzheimer's Like Disease in Mice

COUNTRIES: Saudi Arabia

CONDUCTED BY: Pharmacology department, King Abdulaziz University, Saudi Arabia

PUBLISHED ON: Journal of Alzheimer´s Disease and Parkinsonism

RESEARCH: Alzheimer's disease (AD) is the most common type of dementia. It causes severe suffering for the patients, in the form of progressive behavioral and neurological changes that include functional impairment, loss of independency, emotional problems and behavioral disturbances [1]. AD has several underlined causative factors and aluminum toxicity is one of these factors. Aluminum is a heavy metal that does not have a biological role in the body. In contrast, it affects body systems in a toxic way; it is believed to cause neuro-degeneration in human cell lines [2]. Aluminum is found in some cooking utensils, food preservatives, in drinking water and naturally in dietary products [3].

Recently, several studies have indicated that dietary intake of antioxidants lowers the risk of AD. Yet, more experiments are required to withdraw firm conclusions on the prophylactic effect of antioxidants [4]. In Saudi Arabia and other subtropical countries, pomegranate (Punicagrantum L.) is cultivated on a wide range. This fruit contains high levels of antioxidants mainly in the form of polyphenols. Polyphenols have been shown to be neuroprotective in different model systems [5]

This work aims to investigate the neuroprotective effect of pomegranate against damage caused by AlCl3 in mice brain. Evaluation will be done through behavioral assay, biochemical assay and histopathological assay.

Materials and Methods

Swiss male mice weighing between 30-40 g were used in this study. Animals were caged in groups of ten and allowed free access to food and water. Mice were allowed to acclimatize to the lab environment for one week before the experiment started. Temperature, humidity and 12 hours light and 12 hours dark cycle was maintained. Experiments were approved by the ethics committee.

Aluminum chloride (AlCl3) was used to induce Alzheimer's like disease in mice. Mice were injected AlCl3 40 mg/kg IP [6] daily for 29 days. Animals were grouped into four groups of ten mice each; group (1) Received AlCl3 40 mg/ kg (i.p.) for 29 days and allowed access to normal food and water. Mice of group (2) Received AlCl3 i.p. daily and allowed free access to pomegranate juice (pj) as drinking water and normal food. Mice of group (3) Received equivalent values of saline i.p. and allowed to access pomegranate juice instead of drinking water and normal food. Mice of group (4) Received equivalent values of saline and allowed access to normal food and water.
At the end of treatment period, mice underwent behavior study for five days to evaluate learning and memory status. At experiment termination, mice were sacrificed and brain tissues were collected. Each brain was divided into halves; right and left half hemisphere. One half was fixed and stored in 10% formaldehyde for histopathological studies. The second half was stored at -80°C for biochemical investigations.

Discussion

In general, mice treated with aluminum showed impairment in their spatial memory. Co-administration of AlCl3and Pomegranate Juice revert some of aluminum effects on memory. In the present work, aluminum significantly increased the time required to reach the baited arm and increased the errors compared with that of control (saline treated mice) indicating memory impairment which was consistent with the results obtained by [12], who found that aluminum intoxication caused increase in the period of time needed to finish a trial [12]. Percentage of entry errors was increased by mice treated with AlCl3. Errors of entry were decreased in the group treated with co-administering AlCl3 and Pomegranate Juice by 22%. This result showed that Pomegranate Juice has a protective effect against aluminum induced learning and memory deficit. Results obtained from water maze test showed consistent decrease in the time required to find the platform. The aluminum treated mice showed high fluctuation in the time required to reach the platform from one day to another.

The declining rate of the time needed to reach the platform was relatively steady for the control, Pomegranate Juice and group treated with AlCl3 and Pomegranate Juice. The control group required 17.2 seconds to find the hidden platform in the last day while group treated with AlCl3 and Pomegranate Juice showed lower time (15.4 sec) compared with that of the control and AlCl3 treated group (18.8 sec). These results lead us to estimate that Pomegranate Juice may exert its effect by regulating the decreasing rate of time. The fluctuation in the time required to find the platform showed by AlCl3 treated mice was decreased by the ingestion of Pomegranate Juice .

Suggesting that, although the effect of Pomegranate Juice was not revealed by monitoring the time needed to find the platform, yet, it was showed that Pomegranate Juice effect was contributed to the declining rate in the time and reverting the fluctuation caused by AlCl3. Regarding active avoidance test an increase in the avoidance response was generally found among the mice of all groups and was highly correlated with time. Yet, the total value of the avoidance response was found to be significantly decreased by the AlCl3 treated group compared with that of the control group. This value was significantly increased by the group treated with AlCl3 and Pomegranate Juice compared also with the control group. This result was consistent with results obtained by Sarkaki and others (2013) who found that pomegranate seeds extract increased the active avoidance memory in rats after induced cerebral ischemia [13]. A high correlation was found between the radial maze test and the avoidance response in Pomegranate Juice and AlCl3 and Pomegranate Juice groups. On the other hand, higher correlations were found between errors in the radial maze and avoidance response among the groups. These correlations indicate that both radial arm maze and active avoidance test may evaluate memory processing in a specific region of mice brain. Our findings from head poking test suggest that Pomegranate Juice possess an anxiolytic effect and increase the curiosity. This was showed by increased number of head poking in the Pomegranate Juice treated group which was 80 pokes per 15 min. Comparing with Pomegranate Juice, AlCl3 showed 65 pokes while the control group showed 71 poke per 15 minutes. Yet, the group treated with Pomegranate Juice and AlCl3 showed 49 pokes per 15 minutes which was the lowest head pokes showed by the groups. Kumar[14] found that ethanolic extract of pomegranate was associated with decreased anxiety in mice. Biochemical assay showed relatively high oxidation in brain tissue suggesting that Pomegranate Juice does not prevent oxidative damage of the brain tissue. However, it has been shown that natural antioxidants do not penetrate the blood-brain barrier [15] this may be due to their large structure and water solubility that prevents them from crossing the blood brain barrier. Results obtained from histopathological assay suggest that Pomegranate Juice possess neuroprotective effect against aluminum toxicity represented by decreased number of glial cells and intact cell layer in specific hippocampal regions.

Conclusion

Pomegranate juice was found to be neuroprotective against aluminum induced toxicity. Improved learning and memory was related to ingestion of pomegranate juice in mice. The exact mechanism is unclear since the antioxidant activity of pomegranate juice was not detected in brain tissue. Pomegranate juice may be of great importance in treating Alzheimer's disease neurotoxicity and improving related symptoms in human.

RESEARCH SUMMARY: Alzheimer's disease is the most common type of dementia. Impaired learning and loss of memory are the most common symptoms of the disease. In the present study Alzheimer's disease was chemically induced using aluminum chloride intra-peritoneal injections in mice. Pomegranate juice was used to prevent the Alzheimer's like symptoms. After the treatment period, behavioral studies were done in mice to assess learning and memory. Biochemical assays and histopathological studies were made to determine the effect of pomegranate at the cellular level. Treatment with pomegranate juice for 29 days was shown to improve learning and memory in mice. Histopathological studies showed that pomegranate juice has a protective effect on brain cells against aluminum chloride-induced degeneration. Biochemical results showed decreased concentration of glutathione in brain tissue and an increased concentration of malondialdehyde suggesting increased level of oxidation in the brain tissue. The present results show that, pomegranate juice has a neuroprotective effect against Alzheimer's like disease induced by aluminum chloride. Ingestion of pomegranate juice improves learning and memory in rodents. Further studies are needed to clarify the exact mechanism of action of pomegranate in the brain tissue to determine the neuroprotective effect of pomegranate.

YEAR: 2015

https://zumodegranada.com/en/neuroprotective-role-of-pomegranate-juice/

Bioactive properties of pomegranate juice antioxidant

Bioactive properties of pomegranate juice antioxidant

This study reveals some mechanisms by which pomegranate juice may have interesting and beneficial effects in human health.

WEB TITLE: Bioactive properties of pomegranate juice antioxidant

RESEARCH TITLE: Bioactive properties of commercialised pomegranate (Punica grana-tum) juice: antioxidant, antiproliferative and enzyme inhibiting activities

COUNTRIES: Spain

PUBLISHED ON: Food & Function

RESEARCH:
Pomegranate juice and related products have long been used either in traditional medicine or as nutritional supplements claiming beneficial effects. Although there are several studies on this food plant, only few works have been performed with pomegranate juice or marketed products.

The aim of this work is to evaluate the antioxidant effects of pomegranate juice on cellular models using hydrogen peroxide as an oxidizing agent or DPPH and superoxide radicals in cell free systems. The antiproliferative effects of the juice were measured on HeLa and PC-3 cells by the MTT assay and pharmacologically relevant enzymes (cyclooxygenases, xanthine oxidase, acetylcholinesterase and monoamine oxidase A) were selected for enzymatic inhibition assays.

Pomegranate juice showed significant protective effects against hydrogen peroxide induced toxicity in the Artemia salina and HepG2 models; these effects may be attributed to radical scavenging properties of pomegranate as the juice was able to reduce DPPH and superoxide radicals.

Moderate antiproliferative activities in HeLa and PC-3 cancer cells were observed. However, pomegranate juice was also able to inhibit COX-2 and MAO-A enzymes. This study reveals some mechanisms by which pomegranate juice may have interesting and beneficial effects in human health.

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YEAR: 2015

https://zumodegranada.com/en/bioactive-properties-of-pomegranate-juice-antioxidant/

Effects of Pomegranate Juice after Eccentric Exercise

Effects of Pomegranate Juice after Eccentric Exercise

Supplementation with pomegranate juice attenuates weakness and reduces soreness of the elbow flexor but not of knee extensor muscles. These results indicate a mild, acute ergogenic effect of pomegranate juice in the elbow flexor muscles of resistance trained individuals after eccentric exercise.

Effects of Differing Dosages of Pomegranate Juice Supplementation after Eccentric Exercise.

The Human Performance Laboratory, Department of Kinesiology and Health Education, The University of Texas at Austin. USA

Dietary supplementation with pomegranate juice improves isometric strength recovery after unaccustomed eccentric exercise. The purpose of this study was to determine if there is a dose response effect of pomegranate juice supplementation after eccentric exercise isometric strength recovery.

Forty-five nonresistance trained, recreationally active men were assigned once-daily pomegranate juice, twice-daily pomegranate juice, or placebo supplementation. On day four of supplementation, 20 min of downhill running and 40 maximal eccentric elbow flexion repetitions were performed. Isometric knee extensor and elbow flexor strength, muscular soreness, and serum myoglobin concentrations were measured prior to exercise and 2, 24, 48, 72, and 96 h after exercise.

Throughout the postexercise time period, while isometric knee extensor and elbow flexor strength were similar between once-daily and twice-daily pomegranate juice supplementation groups, isometric strength was significantly higher in pomegranate juice groups than placebo. Knee extensor soreness, elbow flexor soreness, and myoglobin increased in response to exercise but were similar between groups.

It is apparent that pomegranate juice supplementation improves strength recovery in leg and arm muscles following eccentric exercise; however, no dose response effect was present. We conclude that once-daily pomegranate juice supplementation is not different from twice-daily supplementation in regards to strength recovery after eccentric exercise.

Supplementation with pomegranate juice attenuates weakness and reduces soreness of the elbow flexor but not of knee extensor muscles. These results

indicate a mild, acute ergogenic effect of pomegranate juice in the elbow flexor muscles of resistance trained individuals after eccentric exercise.

https://zumodegranada.com/en/effects-of-pomegranate-juice-after-eccentric-exercise/

Pomegranate attenuate risk factors in hemodialysis patients

Pomegranate attenuate risk factors in hemodialysis patients

Regular Pomegranate juice consumption by hemodialysis patients reduced systolic blood pressure and improved lipid profile. These favorable changes may reduce the accelerated atherosclerosis and high incidence of CVD among hemodialysis patients.

Does Pomegranate intake attenuate cardiovascular risk factors in hemodialysis patients?

Quality Assurance Department, Western Galilee Hospital- Nahariya, Israel.

Atherosclerotic cardiovascular disease (CVD) is the most common cause of morbidity and mortality among hemodialysis hemodialysis patients. It has been attributed, among other causes, to hypertension and dyslipidemia. The aim of the present study was to investigate the effect of a year-long consumption of Pomegranate juice, on two traditional cardiovascular (CV) risk factors: hypertension and lipid profile, as well as on cardiovascular events.

101 hemodialysis patients were randomized to receive 100 cc of Pomegranate juice (0.7 mM polyphenols) or matching placebo juice, three times a week for one year. The primary endpoints were traditional CV risk factors; blood pressure and lipid profile. Systolic, diastolic and pulse pressure, plasma levels of triglycerides (TG), high density lipoprotein (HDL), low density lipoprotein (LDL) and total cholesterol were monitored quarterly during the study year. Secondary endpoint was incidence of cardiovascular events.

Pomegranate juice consumption yielded a significant time response improvement in systolic blood pressure, pulse pressure, triglycerides and HDL level; an improvement that was not observed in the placebo intake group. These beneficial outcomes were more pronounced among patients with hypertension, high level of triglycerides and low levels of HDL.

Regular Pomegranate juice consumption by hemodialysis patients reduced systolic blood pressure and improved lipid profile. These favorable changes may reduce the accelerated atherosclerosis and high incidence of CVD among hemodialysis patients.

https://zumodegranada.com/en/pomegranate-attenuate-risk-factors-in-hemodialysis-patients/

Pomegranate produces brain antiinflammatory effects that may attenuate Alzheimer disease progression

Pomegranate produces brain antiinflammatory effects that may attenuate Alzheimer disease progression

These data indicate that dietary pomegranate produces brain antiinflammatory effects that may attenuate Alzheimer disease (AD) progression.

Alzheimer disease (AD) brain is characterized by extracellular plaques of amyloid β (Aβ) peptide with reactive microglia.

This study aimed to determine whether a dietary intervention could attenuate microgliosis.

Memory was assessed in 12-mo-old male amyloid precursor protein/presenilin 1 (APP/PS1) transgenic mice via Barnes maze testing followed by division into either a control-fed group provided free access to normal chow and water or a treatment group provided free access to normal chow and drinking water supplemented with pomegranate extract (6.25 mL/L) for 3 mo followed by repeat Barnes maze testing for both groups.

Three months of pomegranate feeding decreased the path length to escape of mice compared with their initial 12-mo values ($P < 0.05$) and their control-fed counterparts ($P < 0.05$). Brains of the 3-mo study pomegranate-fed mice had lower tumor necrosis factor α (TNF-α) concentrations ($P < 0.05$) and lower nuclear factor of activated T-cell (NFAT) transcriptional activity ($P < 0.05$) compared with controls.

Brains of the 3-mo pomegranate or control mice were also compared with an additional control group of 12-mo-old mice for histologic analysis. Immunocytochemistry showed that pomegranate- but not control-fed mice had attenuated microgliosis ($P < 0.05$) and Aβ plaque deposition ($P < 0.05$) compared with 12-mo-old mice.

An additional behavioral study again used 12-mo-old male APP/PS1 mice tested by T-maze followed by division into a control group provided with free access to normal chow and sugar supplemented drinking water or a treatment group provided with normal chow and pomegranate extract–supplemented drinking water (6.25 mL/L) for 1 mo followed by repeat T-maze testing in both groups.

One month of pomegranate feeding increased spontaneous alternations versus control-fed mice ($P < 0.05$).

Cell culture experiments verified that 2 polyphenol components of pomegranate extract, punicalagin and ellagic acid, attenuated NFAT activity in a reporter cell line ($P < 0.05$) and decreased Aβ-stimulated TNF-a secretion by murine microglia ($P < 0.05$).

These data indicate that dietary pomegranate produces brain antiinflammatory effects that may attenuate Alzheimer disease (AD) progression.

Pomegranate Polyphenols and Extract Inhibit Nuclear Factor of Activated T-Cell Activity and Microglial Activation In Vitro and in a Transgenic Mouse Model of Alzheimer Disease

American Society for Nutrition Journal of Nutrition

https://zumodegranada.com/en/pomegranate-produces-brain-antiinflammatory-effects-that-may-attenuate-alzheimer-disease-progression/

Antibacterial and Antiviral Effects of the Pomegranate

Antibacterial and Antiviral Effects of the Pomegranate

Much of the evidence for pomegranates antibacterial and antiviral activities against foodborne pathogens and other infectious disease organisms comes from in vitro cell-based assays, necessitating further confirmation of in vivo efficacy through human clinical trials.

Pomegranates have been known for hundreds of years for their multiple health benefits, including antimicrobial activity.

The recent surge in multi-drug resistant bacteria and the possibility of widespread global virus pandemics necessitates the need for additional preventative and therapeutic options to conventional drugs.

Research indicates that pomegranates and their extracts may serve as natural alternatives due to their potency against a wide range of bacterial and viral pathogens. Nearly every part of the pomegranate plant has been tested for antimicrobial activities, including the fruit juice, peel, arils, flowers, and bark.

Many of studies have utilized pomegranate peel with success. There are various phytochemical compounds in pomegranate that have demonstrated antimicrobial bioactivity, but most of the studies have found that ellagic acid and larger hydrolyzable tannins, such as punicalagins the highest activities.

In some cases the combination of the pomegranate constituents offers the most benefit.

The positive clinical results on pomegranate and suppression of oral bacteria are intriguing and worthy of further study.

Much of the evidence for pomegranates antibacterial and antiviral activities against foodborne pathogens and other infectious disease organisms comes from in vitro cell-based assays, necessitating further confirmation of in vivo efficacy through human clinical trials.

Evidence-Based Complementary and Alternative Medicine, March 2013

Antibacterial and Antiviral Effects of the Pomegranate

https://zumodegranada.com/en/antibacterial-and-antiviral-effects-of-the-pomegranate/

Pomegranate Juice

[Pomegranate extract reduced aortic sinus and coronary artery atherosclerosis]

Pomegranate extract reduced aortic sinus and coronary artery atherosclerosis

Pomegranate extract reduced aortic sinus and coronary artery atherosclerosis in SR-BI/apoE dKO mice. The atheroprotective effects of pomegranate extract appear to involve reduced oxidative stress and inflammation in the vessel wall despite unaltered systemic markers of inflammation and increased lipoprotein cholesterol in these mice.

The effect of pomegranate extract on coronary artery atherosclerosis in SR-BI/APOE double knockout mice

To examine the effects of pomegranate extract on inflammation and oxidative stress and the development of spontaneous occlusive coronary artery atherosclerosis in the SR-BI/apoE double knockout mouse model of coronary heart disease.

SR-BI/apoE double KO mice were treated for two weeks with pomegranate extract via drinking water, beginning at three weeks of age. Treatment with pomegranate extract increased cholesterol ester content and reduced the abnormally high unesterified/esterified cholesterol ratio of VLDL-sized lipoproteins.

Despite the increase in cholesterol levels associated with VLDL-sized particles, pomegranate extract treatment reduced the size of atherosclerotic plaques in the aortic sinus and reduced the proportion of coronary arteries with occlusive atherosclerotic plaques.

Treatment with pomegranate extract resulted in substantial reductions in levels of oxidative stress and monocyte chemotactic protein-1 in atherosclerotic plaques in the aortic sinus and coronary arteries. In addition, treatment with pomegranate extract reduced lipid accumulation, macrophage infiltration, levels of monocyte chemotactic protein-1 and fibrosis in the myocardium, attenuated cardiac enlargement and the development of ECG abnormalities in SR-BI/apoE double KO mice.

Pomegranate extract reduced aortic sinus and coronary artery atherosclerosis in SR-BI/apoE dKO mice. The atheroprotective effects of pomegranate extract appear to involve reduced oxidative stress and inflammation in the vessel wall

despite unaltered systemic markers of inflammation and increased lipoprotein cholesterol in these mice.

Atherosclerosis

The effect of pomegranate extract on coronary artery atherosclerosis in SR-BI/APOE double knockout mice

https://zumodegranada.com/en/pomegranate-extract-reduced-aortic-sinus-and-coronary-artery-atherosclerosis/

Pomegranate juice improves behavior in a mouse model of Alzheimer's disease

Pomegranate juice improves behavior in a mouse model of Alzheimer's disease

These results suggest that further studies to validate and determine the mechanism of these effects, as well as whether substances in pomegranate juice may be useful in AD, should be considered.

Pomegranate juice decreases amyloid load and improves behavior in a mouse model of Alzheimer's disease.

Although there are no proven ways to delay onset or slow progression of Alzheimer's disease (AD), studies suggest that diet can affect risk. Pomegranates contain very high levels of antioxidant polyphenolic substances as compared to other fruits and vegetables. Polyphenols have been shown to be neuroprotective in different model systems.

Mice treated with pomegranate juice had significantly less (~ 50%) accumulation of soluble Aβ42 and amyloid deposition in the hippocampus as compared to control mice. These results suggest that further studies to validate and determine the mechanism of these effects, as well as whether substances in pomegranate juice may be useful in AD, should be considered.

Neurobiology of Disease, volume 24, Issue 3,

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https://zumodegranada.com/en/pomegranate-juice-decreases-amyloid-load-and-improves-behavior-in-a-mouse-model-of-alzheimers-disease/

Pomegranate consumption may retard Prostate cancer progression

Pomegranate consumption may retard Prostate cancer progression

The outcome of this study could have a direct practical implication and translational relevance to Prostate cancer patients, because it suggests that pomegranate consumption may retard Prostate cancer progression, which may prolong.

Prostate cancer (CaP) is the second leading cause of cancer-related deaths among U.S. males with a similar trend in many Western countries. Prostate cancer is an ideal candidate disease for chemoprevention because it is typically diagnosed in men over 50 years of age, and thus even a modest delay in disease progression achieved through pharmacological or nutritional intervention could significantly impact the quality of life of these patients.

CELLCYCLE Volume 5, Issue 4,

https://zumodegranada.com/en/pomegranate-consumption-may-retard-prostate-cancer-progression/

The proatherogenic effects can be reversed by chronic administration of pomegranate juice

The proatherogenic effects can be reversed by chronic administration of pomegranate juice

This experimental study indicates that the proatherogenic effects induced by perturbed shear stress can be reversed by chronic administration of pomegranate juice. This approach may have implications for the prevention or treatment of atherosclerosis and its clinical manifestations.

Beneficial effects of pomegranate juice on oxidation-sensitive genes and endothelial nitric oxide synthase activity at sites of perturbed shear stress.

Atherosclerosis is enhanced in arterial segments exposed to disturbed flow. Perturbed shear stress increases the expression of oxidation-sensitive responsive genes (such as ELK-1 and p-JUN) in the endothelium. Evidence suggests that polyphenolic antioxidants contained in the juice derived from the pomegranate can contribute to the reduction of oxidative stress and atherogenesis.

This experimental study indicates that the proatherogenic effects induced by perturbed shear stress can be reversed by chronic administration of pomegranate juice. This approach may have implications for the prevention or treatment of atherosclerosis and its clinical manifestations.

PNAS vol. 102 no. 13

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https://zumodegranada.com/en/the-proatherogenic-effects-induced-by-perturbed-shear-stress-can-be-reversed-by-chronic-administration-of-pomegranate-juice/

Pomegranate juice may have cancer-chemopreventive as well as cancer-chemotherapeutic effects against prostate

Pomegranate juice may have cancer-chemopreventive as well as cancer-chemotherapeutic effects against prostate

We suggest that pomegranate juice may have cancer-chemopreventive as well as cancer-chemotherapeutic effects against prostate.

Pomegranate fruit juice for chemoprevention and chemotherapy of prostate cancer.

Prostate cancer is the most common invasive malignancy and the second leading cause of cancer-related deaths among U.S. males, with a similar trend in many Western countries. One approach to control this malignancy is its prevention through the use of agents present in diet consumed by humans. Pomegranate from the tree Punica granatum possesses strong antioxidant and antiinflammatory properties.

We suggest that pomegranate juice may have cancer-chemopreventive as well as cancer-chemotherapeutic effects against prostate.

PNAS, vol. 102 no. 41, October 11, 2005

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https://zumodegranada.com/en/pomegranate-juice-may-have-cancer-chemopreventive-as-well-as-cancer-chemotherapeutic-effects-against-prostate/

The effects of pomegranate juice consumption on PSA progression in men with a rising PSA following primary therapy

The effects of pomegranate juice consumption on PSA progression in men with a rising PSA following primary therapy

Phase II Study of Pomegranate Juice for Men with Rising Prostate-Specific Antigen following Surgery or Radiation for Prostate Cancer.

Phytochemicals in plants may have cancer preventive benefits through antioxidation and via gene-nutrient interactions.

We sought to determine the effects of pomegranate juice (a major source of antioxidants) consumption on prostate-specific antigen (PSA) progression in men with a rising PSA following primary therapy.

We report the first clinical trial of pomegranate juice in patients with prostate cancer. The statistically significant prolongation of PSA doubling time, coupled with corresponding laboratory effects on prostate cancer in vitro cell proliferation and apoptosis as well as oxidative stress, warrant further testing in a placebo-controlled study.

Clin Cancer Res

https://zumodegranada.com/en/the-effects-of-pomegranate-juice-a-major-source-of-antioxidants-consumption-on-prostate-specific-antigen-psa-progression-in-men-with-a-rising-psa-following-primary-therapy/

Polyphenolic antioxidants are associated with inhibition of LDL oxidation and macrophage foam cell formation and attenuation of atherosclerosis development.

Polyphenolic antioxidants are associated with inhibition of LDL oxidation and macrophage foam cell formation and attenuation of atherosclerosis development.

Pomegranate juice consumption for 3 years by patients with carotid artery stenosis reduces common carotid intima-media thickness, blood pressure and LDL oxidation.

Dietary supplementation with polyphenolic antioxidants to animals was shown to be associated with inhibition of LDL oxidation and macrophage foam cell formation, and attenuation of atherosclerosis development.

We investigated the effects of pomegranate juice (PJ, which contains potent tannins and anthocyanins) consumption by atherosclerotic patients with carotid artery stenosis (CAS) on the progression of carotid lesions and changes in oxidative stress and blood pressure.

The results of the present study thus suggest

Clinical Nutrition, Volume 23, Issue 3,

https://zumodegranada.com/en/polyphenolic-antioxidants-are-associated-with-inhibition-of-ldl-oxidation-and-macrophage-foam-cell-formation-and-attenuation-of-atherosclerosis-development/

Pomegranate juice can offer a wide protection against cardiovascular diseases

Pomegranate juice can offer a wide protection against cardiovascular diseases

Pomegranate juice consumption inhibits serum angiotensin converting enzyme activity and reduces systolic blood pressure.

Reduction in serum ACE activity, even with no decrement in blood pressure, was previously shown to attenuate atherosclerosis, pomegranate juice can offer a wide protection against cardiovascular diseases which could be related to its inhibitory effect on oxidative stress and on serum ACE activity.

Consumption of pomegranate juice which is rich in tannins, possess anti-atherosclerotic properties which could be related to its potent anti-oxidative characteristics.

Atherosclerosis, Volume 158, Issue 1, September 2001

https://zumodegranada.com/en/pomegranate-juice-can-offer-a-wide-protection-against-cardiovascular-diseases-which-could-be-related-to-its-inhibitory-effect-on-oxidative-stress-and-on-serum-ace-activity/

Pomegranate juice flavonoids studies in atherosclerotic

Pomegranate juice flavonoids studies in atherosclerotic

Pomegranate juice flavonoids inhibit low-density lipoprotein oxidation and cardiovascular diseases: studies in atherosclerotic mice and in humans.

These antioxidative and antiatherogenic effects of pomegranate polyphenols were demonstrated in vitro, as well as in vivo in humans and in atherosclerotic apolipoprotein E deficient mice. Dietary supplementation of polyphenol-rich pomegranate juice to atherosclerotic mice significantly inhibited the development of atherosclerotic lesions and this may be attributed to the protection of LDL against oxidation.

Published in: Drugs Under Experimental and Clinical Research [2002, 28(2-3):49-62]

The beneficial health effects attributed to the consumption of fruit and vegetables are related, at least in part, to their antioxidant activity. Of special interest is the inverse relationship between the intake of dietary nutrients rich in polyphenols and cardiovascular diseases.

Pomegranate juice has potent antiatherogenic effects in healthy humans

Pomegranate juice has potent antiatherogenic effects in healthy humans

Pomegranate juice consumption reduces oxidative stress, atherogenic modifications to LDL, and platelet aggregation: studies in humans and in atherosclerotic apolipoprotein E–deficient mice1,2.

Pomegranate juice had potent antiatherogenic effects in healthy humans and in atherosclerotic mice that may be attributable to its antioxidative properties.

Dietary supplementation with nutrients rich in antioxidants is associated with inhibition of atherogenic modifications to LDL, macrophage foam cell formation, and atherosclerosis. Pomegranates are a source of polyphenols and other antioxidants.

https://zumodegranada.com/en/pomegranate-juice-has-potent-antiatherogenic-effects-in-healthy-humans/

Pomegranate Juice

Does Pomegranate intake attenuate cardiovascular risk factors in hemodialysis patients

Does Pomegranate intake attenuate cardiovascular risk factors in hemodialysis patients

Regular Pomegranate juice consumption by hemodialysis patients reduced systolic blood pressure and improved lipid profile. These favorable changes may reduce the accelerated atherosclerosis and high incidence of CVD among hemodialysis patients.

Atherosclerotic cardiovascular disease (CVD) is the most common cause of morbidity and mortality among hemodialysis (HD) patients. It has been attributed, among other causes, to hypertension and dyslipidemia. The aim of the present study was to investigate the effect of a year-long consumption of Pomegranate juice (PJ), on two traditional cardiovascular (CV) risk factors: hypertension and lipid profile, as well as on cardiovascular events.

101 hemodialysis patients were randomized to receive 100 cc of Pomegranate juice (0.7 mM polyphenols) or matching placebo juice, three times a week for one year. The primary endpoints were traditional CV risk factors; blood pressure and lipid profile. Systolic, diastolic and pulse pressure, plasma levels of triglycerides (TG), high density lipoprotein (HDL), low density lipoprotein (LDL) and total cholesterol were monitored quarterly during the study year. Secondary endpoint was incidence of cardiovascular events.

Pomegranate juice consumption yielded a significant time response improvement in systolic blood pressure, pulse pressure, triglycerides and HDL level; an improvement that was not observed in the placebo intake group. These beneficial outcomes were more pronounced among patients with hypertension, high level of triglycerides and low levels of HDL.

Regular Pomegranate juice consumption by hemodialysis patients reduced systolic blood pressure and improved lipid profile. These favorable changes may reduce the accelerated atherosclerosis and high incidence of CVD among hemodialysis patients.

Nutrition Journal

Nephrology Department, Western Galilee Hospital Israel

Does Pomegranate intake attenuate cardiovascular risk factors in hemodialysis patients?

https://zumodegranada.com/en/does-pomegranate-intake-attenuate-cardiovascular-risk-factors-in-hemodialysis-patients/

Pomegranate peel promotes regeneration of dermis and pomegranate seed oil promotes regeneration of epidermis

Pomegranate peel promotes regeneration of dermis and pomegranate seed oil promotes regeneration of epidermis

These results suggest heuristic potential of pomegranate fractions for facilitating skin repair in a polar manner, namely aqueous extracts (especially of pomegranate peel) promoting regeneration of dermis, and pomegranate seed oil promoting regeneration of epidermis.

Pomegranate (Punica granatum) is an ancient fruit with exceptionally rich ethnomedical applications. The peel (pericarp) is well regarded for its astringent properties; the seeds for conferring invulnerability in combat and stimulating beauty and fertility.

These results suggest heuristic potential of pomegranate fractions for facilitating skin repair in a polar manner, namely aqueous extracts (especially of pomegranate peel) promoting regeneration of dermis, and pomegranate seed oil promoting regeneration of epidermis.

Journal of Ethnopharmacology, Volume 103, Issue 3, 20 February 2006

https://zumodegranada.com/en/pomegranate-peel-promotes-regeneration-of-dermis-and-pomegranate-seed-oil-promotes-regeneration-of-epidermis/

The consumption of pomegranate juice (PJ), a rich source of antioxidant polyphenols, has grown tremendously due to its reported health benefits.

The consumption of pomegranate juice (PJ), a rich source of antioxidant polyphenols, has grown tremendously due to its reported health benefits.

Pomegranate extracts, which incorporate the major antioxidants found in pomegranates, namely, ellagitannins, have been developed as botanical dietary supplements to provide an alternative convenient form for consuming the bioactive polyphenols found in pomegranate juice.

These studies demonstrate the safety of a pomegranate ellagitannin-enriched polyphenol dietary supplement in humans and provide evidence of antioxidant activity in humans.

https://zumodegranada.com/en/the-consumption-of-pomegranate-juice-pj-a-rich-source-of-antioxidant-polyphenols-has-grown-tremendously-due-to-its-reported-health-benefits/

Effect of Pomegranate Seed Extract on Oxidative Stress duo to Ischemia/Hypoperfusion

Effect of Pomegranate Seed Extract on Oxidative Stress duo to Ischemia/Hypoperfusion

Free radicals are involved in the development and exacerbation of neurological diseases and antioxidants play a protective role. In this study the effect of oral administration of pomegranate seed extract was investigated.

RESEARCH TITLE: Effect of Pomegranate Seed Extract (PGSE) on Oxidative Stress duo to Ischemia/Hypoperfusion in Male Rat Hippocampus

COUNTRIES: Iran

CONDUCTED BY: Dept of Biology Science and Research Sanandaj Branch, Islamic Azad University, Sanandaj, Iran; Dept of Biology, Izeh Branch, Islamic Azad University, Izeh, Iran

PUBLISHED ON: Journal of Ilam University of Medical Sciences

RESEACH:

Introduction:

Free radicals are involved in the development and exacerbation of neurological diseases and antioxidants play a protective role. In this study the effect of oral administration of pomegranate seed extract (PGSE) was investigated on assess the rate of lipid peroxidation and measuring the rate of thiol groups (-SH) in an animal model of chronic ischemic hypoperfusion.

Material & methods:

The rats were randomly divided into three groups: control group, ischemia group and ischemia group receiving the pomegranate seed extract. For ischemia in the rat, general carotid arteries blocked by means of skin suture with two tight knot around the vessel (top and bottom) and then arteries were completely intersect. Then the rats' brains were extracted to assess the rate of lipid peroxidation and measuring the rate of thiol groups (-SH).

Findings:

Our results showed that malondialdehyde and thiol in ischemia group has significantly increased ($p< 0.001$) than in control group and rate of malondialdehyde and thiol in ischemia group receiving the extract of pomegranate seed has significantly decreased, respectively ($p – 0.001$) and ($p+0.001$) than in ischemia group.

Discussion & Conclusion:

Pomegranate seed extract possibly with powerful antioxidant properties, can improve the effect of ischemia such as production of free radicals.

YEAR: 2015

https://zumodegranada.com/en/effect-of-pomegranate-seed-extract-on-oxidative-stress-duo-to-ischemiahypoperfusion/

Pomegranate juice in augmenting memory function

Pomegranate juice in augmenting memory function

While preliminary, these results suggest a role for pomegranate juice in augmenting memory function through task-related increases in functional brain activity.

Pomegranate Juice Augments Memory and fMRI Activity in Middle-Aged and Older
Adults with Mild Memory Complaints

Center for Cognitive Neurosciences, Department of Psychiatry and Biobehavioral
Sciences and Semel Institute for Neuroscience and Human Behavior; Center for Human Nutrition, David Geffen School of Medicine, and the UCLA Longevity Center – all at the University of California, Los Angeles, CA, EEUU

Published: 14 May 2013 Evidence-Based Complementary and Alternative Medicine

Despite increasing emphasis on the potential of dietary antioxidants in preventing memory loss and on diet as a precursor of neurological health, rigorous studies investigating the cognitive effects of foods and their components are rare.

Recent animal studies have reported memory and other cognitive benefits of polyphenols, found abundantly in pomegranate juice.

We performed a preliminary, placebo-controlled randomized trial of pomegranate juice in older subjects with age-associated memory complaints using memory testing and functional brain activation (fMRI) as outcome measures.

Thirty-two subjects (28 completers) were randomly assigned to drink 8 ounces of either pomegranate juice or a flavor-matched placebo drink for 4 weeks.

Subjects received memory testing, fMRI scans during cognitive tasks, and blood draws for peripheral biomarkers before and after the intervention. Investigators and subjects were all blind to group membership.

After 4 weeks, only the pomegranate group showed a significant improvement in the

Buschke Selective Reminding Test of verbal memory and a significant increase in plasma trolox equivalent antioxidant capacity (TEAC) and urolithin A-glucuronide. Furthermore, compared to the placebo group, the pomegranate group had increased fMRI activity during verbal and visual memory tasks.

While preliminary, these results suggest a role for pomegranate juice in augmenting memory function through task-related increases in functional brain activity.

https://zumodegranada.com/en/pomegranate-juice-in-augmenting-memory-function-1/

Pomegranate juice supplementation to mice with advanced atherosclerosis reduced their macrophage oxidative stress

Pomegranate juice supplementation to mice with advanced atherosclerosis reduced their macrophage oxidative stress

Pomegranate juice supplementation to mice with advanced atherosclerosis reduced their macrophage oxidative stress, their macrophage cholesterol flux and even attenuated the development of atherosclerosis. Moreover, a tannin-fraction isolated from pomegranate juice had a significant antiatherosclerotic activity.

Pomegranate Juice Supplementation to Atherosclerotic Mice Reduces Macrophage Lipid Peroxidation, Cellular Cholesterol Accumulation and Development of Atherosclerosis1.

Inhibition of lipid peroxidation contributes to the attenuation of macrophage cholesterol accumulation, foam-cell formation and atherosclerosis. Evidence suggests that nutritional antioxidants such as pomegranate juice (PJ) can contribute to the reduction of oxidative stress and atherogenesis.

Pomegranate juice supplementation to mice with advanced atherosclerosis reduced their macrophage oxidative stress, their macrophage cholesterol flux and even attenuated the development of atherosclerosis. Moreover, a tannin-fraction isolated from pomegranate juice had a significant antiatherosclerotic activity.

J. Nutr. ,vol. 131 no. ,8 August 1,

https://zumodegranada.com/en/pomegranate-juice-supplementation-to-mice-with-advanced-atherosclerosis-reduced-their-macrophage-oxidative-stress-their-macrophage-cholesterol-flux-and-even-attenuated-the-development-of-atherosclero/

Pomegranate juice inhibits oxidized LDL uptake and cholesterol biosynthesis in macrophages

Pomegranate juice inhibits oxidized LDL uptake and cholesterol biosynthesis in macrophages

Macrophage cholesterol accumulation and foam cell formation are the hallmarks of early atherogenesis.

Pomegranate juice (PJ) was shown to inhibit macrophage foam cell formation and development of atherosclerotic lesions. The aim of this study was to elucidate possible mechanisms by which Pomegranate juice reduces cholesterol accumulation in macrophages.

We conclude that Pomegranate juice mediated suppression of Ox-LDL degradation and of cholesterol biosynthesis in macrophages can lead to reduced cellular cholesterol accumulation and foam cell formation.

the Journal of Nutritional Biochemistry, Volume 16, Issue 9, September 2005

https://zumodegranada.com/en/pomegranate-juice-inhibits-oxidized-ldl-uptake-and-cholesterol-biosynthesis-in-macrophages/

Minimum Inhibitory Concentration of Adherence of Punica granatum Linn (pomegranate) Gel Against S. mutans, S. mitis and C. albicans

Minimum Inhibitory Concentration of Adherence of Punica granatum Linn (pomegranate) Gel Against S. mutans, S. mitis and C. albicans

The purpose of this study was to investigate the antimicrobial effect of a Punica granatum Linn (pomegranate) phytotherapeutic gel and miconazole (Daktarin® oral gel) against three standard streptococci strains (mutans ATCC 25175, sanguis ATCC 10577 and mitis ATCC 9811), S. mutans clinically isolated and Candida albicans either alone or in association.

In experiments with three and four associated microorganisms, the Punica granatum L. gel had greater efficiency in inhibiting microbial adherence than the miconazole. The results of this study suggest that this phytotherapeutic agent might be used in the control of adherence of different microorganisms in the oral cavity.

Brazilian Dental Journal (2006) 17(3)

https://zumodegranada.com/en/minimum-inhibitory-concentration-of-adherence-of-punica-granatum-linn-pomegranate-gel-against-s-mutans-s-mitis-and-c-albicans/

Pomegranate polyphenols down-regulate expression of androgen-synthesizing genes in human prostate cancer cells overexpressing the androgen receptor

Pomegranate polyphenols down-regulate expression of androgen-synthesizing genes in human prostate cancer cells overexpressing the androgen receptor

Prostate cancer is dependent on circulating testosterone in its early stages and is treatable with radiation and surgery. However, recurrent prostate tumors advance to an androgen-independent state in which they progress in the absence of circulating testosterone, leading to metastasis and death.

Therefore, inhibition by pomegranate polyphenols of gene expression involved in androgen-synthesizing enzymes and the AR may be of particular importance in androgen- independent prostate cancer cells and the subset of human prostate cancers where AR is up-regulated.

The Journal of Nutritional Biochemistry, Volume 19, Issue 12, December 2008

https://zumodegranada.com/en/pomegranate-polyphenols-down-regulate-expression-of-androgen-synthesizing-genes-in-human-prostate-cancer-cells-overexpressing-the-androgen-receptor/

Pomegranate derived products for cancer chemoprevention

Pomegranate derived products for cancer chemoprevention

Because treatment options for advanced metastasized cancers remain inadequate, developing effective approaches for the prevention of cancer has become an important goal to reduce cancer burden. One such strategy is through chemoprevention, preferably by the use of non-toxic dietary substances and botanical products. Pomegranate, used for centuries for its medicinal properties is now being recognized as a potential chemopreventive and anticancer agent. Increasing body of evidence has underscored the cancer preventive efficacy of pomegranate both in vitro and in vivo animal models. The emerging data provide new insights into the molecular framework needed to establish novel mechanism-based chemopreventive strategies for various human cancers.

Seminars in Cancer Biology, Volume 17, Issue 5, October 2007

https://zumodegranada.com/en/pomegranate-derived-products-for-cancer-chemoprevention/

Pomegranate Juice

Ellagitannin-rich pomegranate extract inhibits angiogenesi in prostate cancer in vitro and in vivo

Ellagitannin-rich pomegranate extract inhibits angiogenesi in prostate cancer in vitro and in vivo

Angiogenesis is critical to tumor growth and is stimulated by tissue hypoxia due to poor oxygen delivery. In turn, cellular hypoxia leads to angiogenesis via the induction of hypoxia-inducible factor-1alpha (HIF-1alpha) and vascular endothelial growth factor (VEGF) at a cellular level. Pomegranate juice and extracts, which are rich sources of ellagitannins, have been shown to have chemopreventive potential against prostate cancer, but there have been no studies on the effects of an ellagitannin-rich pomegranate extract on angiogenesis.

These results demonstrate that an ellagitannin-rich pomegranate extract can inhibit tumor-associated angiogenesis as one of several potential mechanisms for slowing the growth of prostate cancer in chemopreventive applications.

INTERNATIONAL JOURNAL OF ONCOLOGY 32: 475-480, 2008

https://zumodegranada.com/en/ellagitannin-rich-pomegranate-extract-inhibits-angiogenesi-in-prostate-cancer-in-vitro-and-in-vivo/

Safety and antioxidant activity of a pomegranate ellagitannin-enriched polyphenol dietary supplement in overweight individuals with increased waist size

Safety and antioxidant activity of a pomegranate ellagitannin-enriched polyphenol dietary supplement in overweight individuals with increased waist size

The consumption of pomegranate juice (PJ), a rich source of antioxidant polyphenols, has grown tremendously due to its reported health benefits. Pomegranate extracts, which incorporate the major antioxidants found in pomegranates, namely, ellagitannins, have been developed as botanical dietary supplements to provide an alternative convenient form for consuming the bioactive polyphenols found in pomegranate juice.

These studies demonstrate the safety of a pomegranate ellagitannin-enriched polyphenol dietary supplement in humans and provide evidence of antioxidant activity in humans.

J. Agric. Food Chem., 2007

https://zumodegranada.com/en/safety-and-antioxidant-activity-of-a-pomegranate-ellagitannin-enriched-polyphenol-dietary-supplement-in-overweight-individuals-with-increased-waist-size/

Pomegranate byproduct significantly attenuates atherosclerosis development by its antioxidant properties

Pomegranate byproduct significantly attenuates atherosclerosis development by its antioxidant properties

It was thus concluded that The effects of a pomegranate byproduct (PBP, which includes the whole pomegranate fruit left after juice preparation) significantly attenuates atherosclerosis development by its antioxidant properties polyphenolics in topical applications.

***J. Agric. Food Chem.*, 2006, 54**

https://zumodegranada.com/en/pomegranate-byproduct-significantly-attenuates-atherosclerosis-development-by-its-antioxidant-properties/

Pomegranate extract has protective effects against UVA- and UVB-induced cell damage

Pomegranate extract has protective effects against UVA- and UVB-induced cell damage

Exposure to ultraviolet (UV) radiation has been associated with several acute and chronic conditions, including sunburn, edema, hyperplasia, immunosuppression, photoaging, and skin cancer. The role of naturally occurring phytochemicals in the prevention of such UV-related conditions has captured increased interest. Pomegranate (Punica granatum L.) is a rich source of polyphenolics, which have been shown to exert anti-inflammatory, antioxidant, and anticarcinogenic activity in numerous in vivo and in vitro.

Results from this study demonstrate the protective effects of Pomegranate extract against UVA- and UVB-induced cell damage and the potential use of pomegranate.

***J. Agric. Food Chem.*, 2008**

https://zumodegranada.com/en/pomegranate-extract-has-protective-effects-against-uva-and-uvb-induced-cell-damage/

Pomegranate extract Is active against dental plaque

Pomegranate extract Is active against dental plaque

In the present work, we studied the effect of the hydro-alcoholic extract (HAE) from Punica granatum (pomegranate) fruits on dental plaque microorganisms. The study was conducted on 60 healthy patients (33 females and 27 males, with age ranging from 9 to 25 years) using fixed orthodontic appliances, and randomly distributed into 3 groups of 20 patients each.

The hydro-alcoholic extract (HAE) from Punica granatum (pomegranate) fruits presented also an antibacterial activity against selected microorganisms, and may be a possible alternative for the treatment of dental plaque bacteria.

Journal of Herbal Pharmacotherapy, 2006, Vol. 6, No. 2 , Pages 79-9

https://zumodegranada.com/en/pomegranate-extract-is-active-against-dental-plaque/

Pomegranate juice does not alter clearance of intravenous or oral midazolam

Pomegranate juice does not alter clearance of intravenous or oral midazolam

The effect of pomegranate juice (PJ) or grapefruit juice (GFJ) on CYP3A activity was studied in vitro and in healthy human volunteers.

Thus, pomegranate juice does not alter clearance of intravenous or oral midazolam, whereas grapefruit juice (GFJ) impairs clearance and elevates plasma levels of oral midazolam.

J Clin Pharmacol March 2007 vol. 47

https://zumodegranada.com/en/pomegranate-juice-does-not-alter-clearance-of-intravenous-or-oral-midazolam/

Anti-inflammatory properties of a pomegranate extract and its metabolite urolithin-A in a colitis rat model and the effect of colon inflammation on phenolic metabolism

Anti-inflammatory properties of a pomegranate extract and its metabolite urolithin-A in a colitis rat model and the effect of colon inflammation on phenolic metabolism

Whether the beneficial effects of pomegranate are due to the ellagitannins or to their microbiota-derived urolithins is not known. Our objectives were to evaluate the effects of pomegranate intake and its main microbiota-derived metabolite urolithin-A (UROA) on colon inflammation and to assess whether UROA is the main anti-inflammatory compound. In addition, the effect of the inflammation on the phenolic metabolism was also explored.

Our results suggest that metabolite urolithin-A could be the most active anti-inflammatory compound derived from pomegranate ingestion in healthy subjects, whereas in colon inflammation, the effects could be due to the nonmetabolized ellagitannin-related fraction.

The Journal of Nutritional Biochemistry, Volume 21, Issue 8, August 2010

https://zumodegranada.com/en/anti-inflammatory-properties-of-a-pomegranate-extract-and-its-metabolite-urolithin-a-in-a-colitis-rat-model-and-the-effect-of-colon-inflammation-on-phenolic-metabolism/

Pomegranate contribute to the reduction of oxidative stress and atherogenesis during disturbed shear stress

Pomegranate contribute to the reduction of oxidative stress and atherogenesis during disturbed shear stress

Atherosclerosis is enhanced in arterial segments exposed to disturbed flow. Perturbed shear stress increases the expression of oxidation-sensitive responsive genes (such as ELK-1 and p-CREB). Polyphenolic antioxidants contained in the juice derived from the pomegranate contribute to the reduction of oxidative stress and atherogenesis during disturbed shear stress.

Aim of the study: To evaluate the effects of intervention with the Pomegranate Fruit Extract (PFE) rich in polyphones (punicalagin, which is a potent antioxidant)

This study indicates that the proatherogenic effects induced by perturbed shear stress can be also reversed by chronic administation of Pomegranate Fruit Extract (PFE) rich in polyphones (punicalagin, which is a potent antioxidant)

Cardiovasc Res (2007) 73 (2): 414-423.

https://zumodegranada.com/en/pomegranate-contribute-to-the-reduction-of-oxidative-stress-and-atherogenesis-during-disturbed-shear-stress/

Pomegranate juice reduces oxidized low-density lipoprotein downregulation of endothelial nitric oxide synthase in human coronary endothelial cells

Pomegranate juice reduces oxidized low-density lipoprotein downregulation of endothelial nitric oxide synthase in human coronary endothelial cells

We examined the hypothesis that pomegranate juice (PJ) can revert the potent downregulation of the expression of endothelial nitric-oxide synthase (NOSIII) induced by oxidized low-density liporotein (oxLDL) in human coronary endothelial cells.

Our data suggest that PJ can exert beneficial effects on the evolution of clinical vascular complications, coronary heart disease, and atherogenesis in humans by enhancing the the expression of endothelial nitric-oxide synthase NOSIII bioactivity.

Nitric Oxide. Volume 15, Issue 3, November 2006

https://zumodegranada.com/en/pomegranate-juice-reduces-oxidized-low-density-lipoprotein-downregulation-of-endothelial-nitric-oxide-synthase-in-human-coronary-endothelial-cells/

Effects of consumption of pomegranate juice on carotid intima–media thickness in men and women at moderate risk for coronary heart disease

Effects of consumption of pomegranate juice on carotid intima–media thickness in men and women at moderate risk for coronary heart disease

This randomized, double-blind, parallel trial assessed the influence of pomegranate juice consumption on anterior and posterior carotid intima–media thickness (CIMT) progression rates in subjects at moderate risk for coronary heart disease.

In conclusion, these results suggest that in subjects at moderate coronary heart disease risk, pomegranate juice consumption had no significant effect on overall CIMT progression rate but may have slowed CIMT progression in subjects with increased oxidative stress and disturbances in the TG-rich lipoprotein/HDL axis.

The American Journal of Cardiology, Volume 104, Issue 7, 1 October 2009

https://zumodegranada.com/en/effects-of-consumption-of-pomegranate-juice-on-carotid-intima-media-thickness-in-men-and-women-at-moderate-risk-for-coronary-heart-disease/

Pomegranate Juice

Pomegranate juice consumption improves sperm quality and antioxidant activity of rats

Pomegranate juice consumption improves sperm quality and antioxidant activity of rats

Pomegranate fruit is inescapably linked with fertility, birth and eternal life because of its many seeds. The aim of this study was to investigate the effects of pomegranate juice (PJ) consumption on sperm quality, spermatogenic cell density, antioxidant activity and testosterone level of male healthy rats.

The results suggest that PJ consumption improves sperm quality and antioxidant activity of rats.

Clin Nutr. 2008 Apr;27

https://zumodegranada.com/en/pomegranate-juice-consumption-improves-sperm-quality-and-antioxidant-activity-of-rats/

Photochemopreventive Effect of Pomegranate Fruit Extract on UVA-mediated Activation of Cellular Pathways in Normal Human Epidermal Keratinocytes

Photochemopreventive Effect of Pomegranate Fruit Extract on UVA-mediated Activation of Cellular Pathways in Normal Human Epidermal Keratinocytes

UVA is the major portion (90–99%) of solar radiation reaching the surface of the earth and has been described to lead to formation of benign and malignant tumors. UVA-mediated cellular damage occurs primarily through the release of reactive oxygen species and is responsible for im-munosuppression, photodermatoses, photoaging and photocar-cinogenesis. Pomegranate fruit extract (PFE) possesses strong antioxidant and anti-inflammatory properties. Our recent studies have shown that Pomegranate fruit extract treatment of normal human epidermal keratinocytes (NHEK) inhibits UVB-mediated activation of MAPK and NF-κB pathways.

Photochemistry and Photobiology, Volume 82, Issue 2, pages 398–405, March 2006

https://zumodegranada.com/en/photochemopreventive-effect-of-pomegranate-fruit-extract-on-uva-mediated-activation-of-cellular-pathways-in-normal-human-epidermal-keratinocytes/

Maternal dietary supplementation with pomegranate juice is neuroprotective for the neonatal brain

Maternal dietary supplementation with pomegranate juice is neuroprotective for the neonatal brain

Neonatal hypoxic-ischemic brain injury remains a significant cause of morbidity and mortality and lacks effective therapies for prevention and treatment. Recently, interest in the biology of polyphenol compounds has led to the discovery that dietary supplementation with foods rich in polyphenols (e.g. blueberries, green tea extract) provides neuroprotection in adult animal models of ischemia and Alzheimer's disease.

These results demonstrate that maternal dietary supplementation with pomegranate juice is neuroprotective for the neonatal brain.

Pediatric Research (2005) 57

https://zumodegranada.com/en/maternal-dietary-supplementation-with-pomegranate-juice-is-neuroprotective-for-the-neonatal-brain/

Pomegranate fruit extract can be a useful chemopreventive/chemotherapeutic agent against human lung cancer

Pomegranate fruit extract can be a useful chemopreventive/chemotherapeutic agent against human lung cancer

Developing novel mechanism-based chemopreventive approaches for lung cancer through the use of dietary substances which humans can accept has become an important goal.

Our results provide a suggestion that Pomegranate fruit extract can be a useful chemopreventive/chemotherapeutic agent against human lung cancer.

Carcinogenesis (2006) 28 (1): 163-173

https://zumodegranada.com/en/pomegranate-fruit-extract-can-be-a-useful-chemopreventivechemotherapeutic-agent-against-human-lung-cancer/

Concentrated Pomegranate Juice Improves Lipid Profiles in Diabetic Patients with Hyperlipidemia

Concentrated Pomegranate Juice Improves Lipid Profiles in Diabetic Patients with Hyperlipidemia

This study assessed the effect of concentrated pomegranate juice (CPJ) consumption on lipid profiles of type II diabetic patients with hyperlipidemia.

It is concluded that pomegranate juice consumption may modify heart disease risk factors in hyperlipidemic patients, and its inclusion therefore in their diets may be beneficial.

Journal of Medicinal Food volume: 7 Issue 3: September 24, 2004

https://zumodegranada.com/en/concentrated-pomegranate-juice-improves-lipid-profiles-in-diabetic-patients-with-hyperlipidemia/

Oral Consumption of Pomegranate Fruit Extract Inhibits Growth and Progression of Primary Lung Tumors in Mice

Oral Consumption of Pomegranate Fruit Extract Inhibits Growth and Progression of Primary Lung Tumors in Mice

Apoptotic induction in the combination treatments was significantly higher ($P < .01$) than in single treatments. Both pomegranate extracts and genistein inhibit the growth of MCF-7 breast cancer cells through induction of apoptosis, with combination treatment being more efficacious than single treatments.

To develop novel mechanism-based preventive approaches for lung cancer, we examined the effect of oral consumption of a human achievable dose of pomegranate fruit extract (PFE) on growth, progression, angiogenesis, and signaling pathways in two mouse lung tumor protocols.

Thus, our data show that PFE significantly inhibits lung tumorigenesis in A/J mice and merits investigation as a chemopreventive agent for human lung cancer.

Cancer Res April 1, 2007 67

https://zumodegranada.com/en/oral-consumption-of-pomegranate-fruit-extract-inhibits-growth-and-progression-of-primary-lung-tumors-in-mice/

Anticancer Activities of Pomegranate Extracts and Genistein in Human Breast Cancer Cells

Anticancer Activities of Pomegranate Extracts and Genistein in Human Breast Cancer Cells

Previous studies have demonstrated the anticarcinogenic activity of pomegranate extracts and genistein in a series of human cancer cells. In the present study, the potential anticancer effects of pomegranate extracts and genistein on inhibition of cell proliferation and induction of apoptosis in human breast cancer cells was investigated.

Apoptotic induction in the combination treatments was significantly higher ($P < .01$) than in single treatments. Both pomegranate extracts and genistein inhibit the growth of MCF-7 breast cancer cells through induction of apoptosis, with combination treatment being more efficacious than single treatments.

Journal of Medicinal Food. Winter 2005, 8(4)

https://zumodegranada.com/en/554-2/

Pomegranate extract improves a depressive state and bone properties in menopausal syndrome model ovariectomized mice

Pomegranate extract improves a depressive state and bone properties in menopausal syndrome model ovariectomized mice

These changes suggest that the pomegranate extract inhibits ovariectomy-stimulated bone turnover. It is thus conceivable that pomegranate is clinically effective on a depressive state and bone loss in menopausal syndrome in women.

Journal of Ethnopharmacology, Volume 92, Issue 1, May 2004

Pomegranate fruit extract reduces the expression of oxidation-sensitive genes at the sites of perturbed shear-stress

Pomegranate fruit extract reduces the expression of oxidation-sensitive genes at the sites of perturbed shear-stress

Metabolic syndrome includes most widely distributed clinical conditions such as obesity, hypertension, dislipidemia, and diabetes. Pomegranate fruit extract (PFE), rich in polyphenolic antioxidants, reduces the expression of oxidation-sensitive genes at the sites of perturbed shear-stress.

These data highlight possible clinical applications of Pomegranate fruit extract in metabolic syndrome.

Nitric Oxide, Volume 17, Issue 1, August 2007, Pages 50–54

https://zumodegranada.com/en/pomegranate-fruit-extract-reduces-the-expression-of-oxidation-sensitive-genes-at-the-sites-of-perturbed-shear-stress/

Pomegranate flower improves cardiac lipid metabolism in a diabetic rat model: role of lowering circulating lipids

Pomegranate flower improves cardiac lipid metabolism in a diabetic rat model: role of lowering circulating lipids

Excess triglyceride (TG) accumulation and increased fatty acid (FA) oxidation in the diabetic heart contribute to cardiac dysfunction. Punica granatum flower (PGF) is a traditional antidiabetic medicine. Here, we investigated the effects and mechanisms of action of Punica granatum flower on abnormal cardiac lipid metabolism both in vivo and in vitro.

Our findings suggest that Punica granatum flower improves abnormal cardiac lipid metabolism in ZDF rats by activating PPAR-a and thereby lowering circulating lipid and inhibiting its cardiac uptake.

British Journal of Pharmacology, Volume 145, Issue 6, pages 767–774, July 2005

https://zumodegranada.com/en/pomegranate-flower-improves-cardiac-lipid-metabolism-in-a-diabetic-rat-model-role-of-lowering-circulating-lipids/

Pomegranate Juice

Synergic interaction between pomegranate extract and antibiotics against Staphylococcus aureus

Synergic interaction between pomegranate extract and antibiotics against Staphylococcus aureus

In conclusion, Punica granatum (pomegranate) methanolic extract (PGME) dramatically enhanced the activity of all antibiotics tested, and thus, offers an alternative for the extension of the useful lifetime of these antibiotics.

Journals Canadian Journal of Microbiology List of Issues Volume 51, Number 7, July 2005

https://zumodegranada.com/en/synergic-interaction-between-pomegranate-extract-and-antibiotics-against-staphylococcus-aureus/

Clinical evaluation pomegranate juice antioxidant effects in hypertensive patients

Clinical evaluation pomegranate juice antioxidant effects in hypertensive patients

Pomegranate juice (PJ) contains different types of antioxidants and bioactive polyphenols and has been reported to promote cardiovascular health through several mechanisms.

The present study aimed to examine the effects of 2-week intake of Pomegranate juice (PJ) on blood pressure, flow-mediated dilatation (FMD), serum lipid profile and concentrations of inflammatory and endothelial function biomarkers.

Twenty-one hypertensive patients (aged 30–67 years) were recruited into the trial and assigned to receive either Pomegranate juice (PJ) (150 ml/day in a single occasion between lunch and dinner; n = 11) or the same amount of water (n = 10) for a period of 2 weeks.

Systolic (SBP) and diastolic (DBP) pressures together with FMD and serum concentrations of lipid profile parameters, apolipoproteins A and B, intracellular adhesion molecule-1 (ICAM-1), vascular endothelial adhesion molecule 1 (VCAM-1), E-selectin, high-sensitivity C-reactive protein (hs-CRP) and interleukin-6 (IL-6) were measured at baseline and at the end of trial.

Pomegranate juice (PJ) consumption was associated with significant reductions in SBP ($p = 0.002$) and DBP ($p = 0.038$) but not FMD ($p > 0.05$). Serum levels of VCAM-1 ($p = 0.008$) were significantly reduced by Pomegranate juice (PJ) while those of E-selectin were elevated ($p = 0.039$). However, no significant effect was observed from Pomegranate juice (PJ) on serum levels of ICAM-1, hs-CRP, lipid profile parameters, apolipoproteins and IL-6 in any of the study groups ($p > 0.05$). Consumption of Pomegranate juice (PJ) for 2 weeks has effective hypotensive effects, and may improve endothelial function by decreasing serum concentrations of VCAM-1.

These findings suggest Pomegranate juice (PJ) as a beneficial cardioprotective supplement for hypertensive subjects.

Phytotherapy Research 21 MAR 2013

Clinical Evaluation of Blood Pressure Lowering, Endothelial Function Improving, Hypolipidemic and Anti-Inflammatory Effects of Pomegranate Juice in Hypertensive Subjects

https://zumodegranada.com/en/clinical-evaluation-pomegranate-juice-antioxidant-effects-in-hypertensive-patients/

Pomegranate juice (PJ) increases prostate specific antigen (PSA) doubling time in prostate cancer (CaP) patients with a rising PSA

Pomegranate juice (PJ) increases prostate specific antigen (PSA) doubling time in prostate cancer (CaP) patients with a rising PSA

Our group has shown in a phase II clinical trial that pomegranate juice (PJ) increases prostate specific antigen (PSA) doubling time in prostate cancer (CaP) patients with a rising PSA. Ellagitannins (ETs) are the most abundant polyphenols present in PJ and contribute greatly towards its reported biological properties.

The chemopreventive potential of pomegranate Ellagitannins and localization of their bioactive metabolites in mouse prostate tissue suggest that pomegranate may play a role in prostate cancer treatment and chemoprevention. This warrants future human tissue bioavailability studies and further clinical studies in men with prostate cancer.

J. Agric. Food Chem., 2007, 55 (19)

https://zumodegranada.com/en/pomegranate-juice-pj-increases-prostate-specific-antigen-psa-doubling-time-in-prostate-cancer-cap-patients-with-a-rising-psa/

Pomegranate juice possesses potent antioxidant activity that results in marked protection of NO against oxidative destruction

Pomegranate juice possesses potent antioxidant activity that results in marked protection of NO against oxidative destruction

Pomegranate juice (PJ), which is a rich source of potent flavonoid antioxidants, was tested for its capacity to protect nitric oxide (NO) against oxidative destruction and enhance the biological actions of nitric oxide. Employing chemiluminescence headspace analysis, Pomegranate juice was found to be a potent inhibitor of superoxide anion-mediated disappearance of nitric oxide. Pomegranate juice was much more potent than Concord grape juice, blueberry juice, red wine, ascorbic acid, and dl-a-tocopherol.

These observations indicate that Pomegranate juice possesses potent antioxidant activity that results in marked protection of NO against oxidative destruction, thereby resulting in augmentation of the biological actions of nitric oxide.

Nitric Oxide 15 (2006) 93–102

https://zumodegranada.com/en/pomegranate-juice-possesses-potent-antioxidant-activity-that-results-in-marked-protection-of-no-against-oxidative-destruction/

Pomegranate fruit exert anti-proliferative, anti-invasive, anti-eicosanoid, and pro-apoptotic actions in breast and prostate cancer cells and anti-angiogenic activities in vitro and in vivo

Pomegranate fruit exert anti-proliferative, anti-invasive, anti-eicosanoid, and pro-apoptotic actions in breast and prostate cancer cells and anti-angiogenic activities in vitro and in vivo

Differentiation refers to the ability of cancer cells to revert to their normal counterparts, and its induction represents an important noncytotoxic therapy for leukemia, and also breast, prostate, and other solid malignancies. Flavonoids are a group of differentiation-inducing chemicals with a potentially lower toxicology profile than retinoids. Flavonoid-rich polyphenol fractions from the pomegranate (Punica granatum) fruit exert anti-proliferative, anti-invasive, anti-eicosanoid, and pro-apoptotic actions in breast and prostate cancer cells and anti-angiogenic activities in vitro and in vivo.

The results highlight an important, previously unknown, mechanism of the cancer preventive and suppressive potential of pomegranate fermented juice and pericarp extracts.

Journal of Medicinal Food, Volume: 7 Issue 1: July 7, 2004

https://zumodegranada.com/en/pomegranate-fruit-exert-anti-proliferative-anti-invasive-anti-eicosanoid-and-pro-apoptotic-actions-in-breast-and-prostate-cancer-cells-and-anti-angiogenic-activities-in-vitro-and-in-vivo/

Synergistic effect of pomegranate juice metabolites on prostate cancer cells

Synergistic effect of pomegranate juice metabolites on prostate cancer cells

Ellagitannins (ET) from pomegranate juice (PJ) are bioactive polyphenols with chemopreventive potential against prostate cancer (PCa).

Ellagitannins (ET) are not absorbed intact, but are partially hydrolyzed in the gut to ellagic acid (EA). Colonic microflora can convert ellagic acid (EA) to urolithin A (UA), and ellagic acid (EA) and to urolithin A (UA) enter the circulation after Pomegranate Juice consumption.

Here, we studied the effects of ellagic acid (EA) and urolithin A (UA) on cell proliferation, cell cycle and apoptosis in DU-145 and PC-3 androgen-independent cells prostate cancer (PCa), and whether combinations of ellagic acid (EA) and urolithin A (UA) affected cell proliferation. ellagic acid (EA) demonstrated greater dose-dependent
antiproliferative effects in both cell lines compared to urolithin A (UA).

Ellagic acid (EA) induced cell cycle arrest in S-phase associated with decreased cyclin B1 and cyclin D1 levels. UA induced a G2/M arrest and increased cyclin B1 and cdc2 phosphorylation at tyrosine-15, suggesting inactivation of the cyclin B1/cdc2 kinase complex. Ellagic acid (EA) induced apoptosis in both cell lines, while urolithin A (UA) had a less pronounced pro-apoptotic effect only in DU-145.

Co-treatment with low concentrations of ellagic acid (EA) and urolithin A (UA) dramatically decreased cell proliferation, exhibiting synergism in PC-3 cells evaluated by isobolographic analysis and combination index.

These data provide information on pomegranate metabolites for the prevention prostate cancer (PCa) recurrence, supporting the role of gut flora-derived metabolites for cancer prevention.

Evidence-Based Complementary and Alternative Medicine
February 2013
Pomegranate Juice Metabolites, Ellagic Acid and Urolithin A, Synergistically Inhibit Androgen Independent Prostate Cancer Cell Growth via Distinct Effects on Cell Cycle Control and Apoptosis

https://zumodegranada.com/en/synergistic-effect-of-pomegranate-juice-metabolites-on-prostate-cancer-cells/

Polyphenols are responsible for the proapoptotic properties of pomegranate juice on leukemia cell lines

Polyphenols are responsible for the proapoptotic properties of pomegranate juice on leukemia cell lines

Pomegranates have shown great promise as anti-cancer agents in a number of cancers including clinical trials in prostate cancer. We have previously shown pomegranate juice (PGJ) induced apoptosis and preferentially alters the cell cycle in leukemia cell lines compared with nontumor control cells. However, the agents responsible have not yet been fully elucidated.

Treatment of four leukemia cell lines with five fractions obtained from pomegranate juice by solid phase extraction demonstrated that only the acetonitrile fractions decreased adenosine triphosphate (ATP) levels in all leukemia cell lines. Acetonitrile fractions also significantly activated caspase-3 and induced nuclear morphology characteristic of apoptosis.

S phase arrest was induced by acetonitrile fractions which matched S phase arrest seen previously following whole pomegranate juice treatments.

The acetonitrile fractions contained higher phenol content than whole pomegranate juice whereas only low levels of phenols were seen in any other fraction. Liquid chromatography mass spectrometry (LC–MS) analysis demonstrated that acetonitrile fractions were enriched in ellagitannins, ellagic acid, and hydroxycinnamic acid derivatives but depleted in anthocyanins.

Individual treatments with identified compounds demonstrated that the ellagitannin: punicalagin was the most active and mimicked the responses seen following acetonitrile fraction treatment. Bioactive components within pomegranate were confined to the acetonitrile fraction of pomegranate juice.

The enrichment in ellagitannins and hydroxycinnamic acids suggest these may provide the majority of the bioactivities of pomegranate juice. Individual treatments with compounds identified demonstrated that the ellagitannin: punicalagin was the most active agent, highlighting this compound as a key bioactive agent in pomegranate juice.

https://zumodegranada.com/en/polyphenols-are-responsible-for-the-proapoptotic-properties-of-pomegranate-juice-on-leukemia-cell-lines/

Pomegranate fruit extract protects against the adverse effects of UV-B radiation

Pomegranate fruit extract protects against the adverse effects of UV-B radiation

Pomegranate Fruit Extract Modulates UV-B–mediated Phosphorylation of Mitogen-activated Protein Kinases and Activation of Nuclear Factor Kappa B in Normal Human Epidermal Keratinocytes.

Excessive exposure of solar ultraviolet (UV) radiation, particularly its UV-B component, to humans causes many adverse effects that include erythema, hyperplasia, hyperpigmentation, immunosuppression, photoaging and skin cancer. In recent years, there is increasing use of botanical agents in skin care products. Pomegranate derived from the tree Punica granatum contains anthocyanins (such as delphinidin, cyanidin and pelargonidin) and hydrolyzable tannins (such as punicalin, pedunculagin, punicalagin, gallagic and ellagic acid esters of glucose) and possesses strong antioxidant and anti-inflammatory properties.

Taken together, our data shows that pomegranate fruit extract protects against the adverse effects of UV-B radiation by inhibiting UV-B–induced modulations of NF-κB and MAPK pathways and provides a molecular basis for the photochemopreventive effects of pomegranate fruit extract PFE.

Photochemistry and Photobiology, Volume 81, Issue 1, pages 38–45, January 2005

https://zumodegranada.com/en/pomegranate-fruit-extract-protects-against-the-adverse-effects-of-uv-b-radiation/

Pomegranate Antioxidant Properties of Spices Herbs and Other Sources

Pomegranate Antioxidant Properties of Spices Herbs and Other Sources

Pomegranate is a spiny, deciduous shrub, or small tree with strong antioxidant properties and this has been attributed to the high polyphenolic content. Pomegranate juice is a polyphenol-rich fruit juice with high antioxidant capacity.

This chapter describes the botany, history, producing regions, flavor and aroma, parts used, and active constituents. The chapter also highlights the uses of pomegranate in different recipes around the world.

Pomegranate has been reported to have anti-inflammatory, antiproliferative, antitumor, antimutagenic, and antioxidant properties.

Finally the medicinal uses, functional properties, and antioxidant properties of pomegranate are discussed in great detail.

Antioxidant Properties of Spices, Herbs and Other Sources 2013, pp 477-487

https://zumodegranada.com/en/pomegranate-antioxidant-properties-of-spices-herbs-and-other-sources/

Pomegranate juice consumption by diabetic patients could contribute to attenuation of atherosclerosis

Pomegranate juice consumption by diabetic patients could contribute to attenuation of atherosclerosis

Anti-oxidative effects of pomegranate juice (PJ) consumption by diabetic patients on serum and on macrophages.

Diabetes is associated with increased oxidative stress and atherosclerosis development. In the present study, we investigated the effects of pomegranate juice (PJ; which contains sugars and potent anti-oxidants) consumption by diabetic patients on blood diabetic parameters, and on oxidative stress in their serum and macrophages.

We thus conclude that pomegranate juice consumption by diabetic patients did not worsen the diabetic parameters, but rather resulted in anti-oxidative effects on serum and macrophages, which could contribute to attenuation of atherosclerosis development in these patients.

Atherosclerosis, volume 187, Issue 2, August 2006

https://zumodegranada.com/en/conclude-that-pomegranate-juice-consumption-by-diabetic-patients-did-not-worsen-the-diabetic-parameters-but-rather-resulted-in-anti-oxidative-effects-on-serum-and-macrophages-which-could-contribute/