pomella®
POMEGRANATE EXTRACT

CLINICAL SUMMARY

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These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

Please note that the physiological activity of the ingredient(s) described herein is supported by the referenced clinical trial report(s). Marketers of finished products containing the ingredient(s) described herein are responsible for determining whether claims made for such products are lawful and in compliance with the laws of the country in which they will market the products.

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CARDIOVASCULAR & GLYCEMIC HEALTH

DETAILS

Title: Antioxidative effect of *Punica granatum* (pomegranate) on biochemical parameters in patients with diabetes mellitus (type 2) and myocardial infarction: A double blind placebo controlled trial.

Design: randomized, double-blind, placebo-controlled, parallel trial

Dose: 300mg Pomella® (note: tablets & excipients equated to 300mg tablet containing 150mg Pomella® per tablet which was administered 2x daily for a total of 300mg per day) or placebo as an "add-on" along with other prescribed medication. *All lifesaving / regular medications were prescribed by doctors from the Department of General Medicine. All participants in the trial were on one or more of the following: Aspirin (325mg stat then 150mg daily), Clopidogrel (300mg stat then 75mg daily), Atorvastatin (40-80mg stat then 10mg daily), Nitrolong/Glyceryl Trinitrate (2.6mg BD) Sorbitrate (5mg SOS), and Ramipril (2.5-10mg OD), Metoprolol (50mg TDS).*

Duration: 1 month

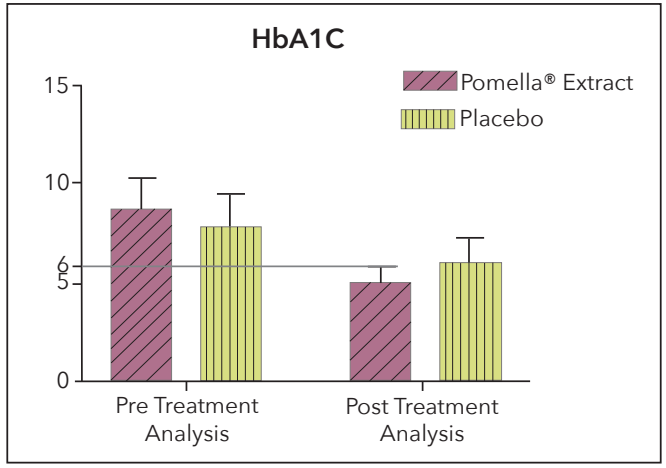
Size: n=40 (20-60 years)

Reference: Goyal R et al. Antioxidative effect of *Punica granatum* (pomegranate) on biochemical parameters in patients with diabetes mellitus (type 2) and myocardial infarction: A double blind placebo controlled trial. Int J Adv Res. 2016. 4(5): 857-64.

SUMMARY

Patients were administered 300mg Pomella® twice daily for 30-days as an adjunct treatment showed significant improvements in key metabolic biomarkers. Especially significant decreases in blood glucose and HbA1c were seen compared to baseline.

* ↓ Fasting Blood Glucose 49% (vs 33% ↓ w/placebo; 50%>)
* ↓ Postprandial Blood Glucose (PPBG) 60% (vs 33% ↓ w/P; 82%>)
* ↓ HbA1c 40% (vs 12% ↓ w/placebo; 3.4x>)
* ↑ Total Antioxidant Activity 379% (vs 28% ↑ w/placebo; 13.5x>)
* ↑ Glutathion (GSH) Peroxidase 230% (vs 17% ↑ w/placebo; 13.4x>)
* ↑ Glutathion (GSH) Reductase 163% (vs 25% ↑ w/placebo; 6.5x>)
* ↑ Super Oxide Dismutase (SOD) 149% (vs 17% ↑ w/placebo; 8.7x>)



** Statistically Significant in Publication*

CARDIOVASCULAR & GLYCEMIC HEALTH

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Duration: 1 month

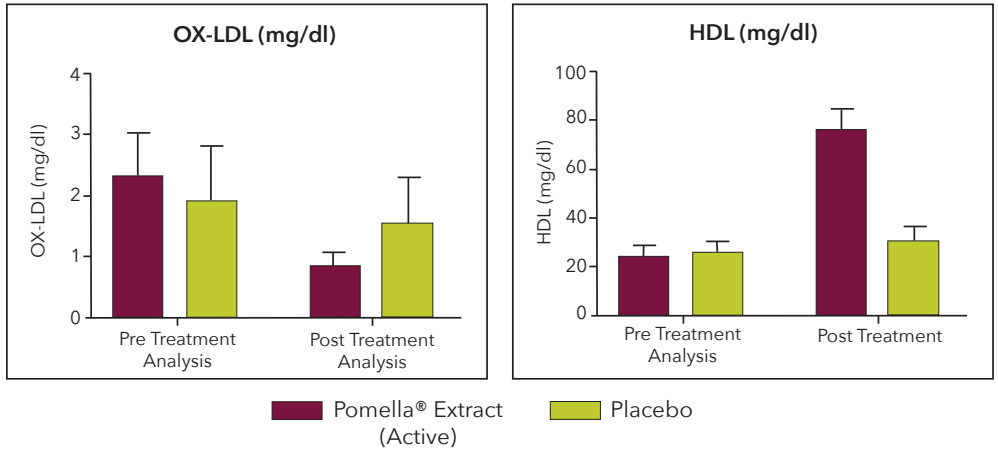
Size: n=100 (20-60 years)

Reference: Goyal R et al. An antioxidative effect of *Punica granatum* (pomegranate) on biochemical parameters in patients with myocardial infarction: A double blind placebo controlled trial. Eur J Biomed Pharm Sci. 2016. 3(5): 662-67.

SUMMARY

Patients were administered 300mg Pomella® twice daily for 30-days as an adjunct treatment showed significant improvements in biomedical parameters such as HDL, OX-LDL, serum homocysteine, hs-CRP, and others.

* ↑ HDLs 215% (from 24.2 → 76.1; vs 16% ↑ w/placebo; 13.1x>)
* ↓ Triglycerides 47% (from 513.2 → 271.0; vs 7% ↓ w/placebo; 7x>)
* ↓ Total Cholesterol 39% (from 381.2 → 231.1; vs 6% ↓ w/placebo; 7x>)
* ↓ LDL 20% (from 109.5 → 88.1; vs 7% ↓ w/placebo; 3x>)
* ↓ OX-LDL 64% (from 2.3 → 0.8; vs 19% ↓ w/placebo; 3.3x>)
* ↓ hs-CRP 56% (from 3.1 → 1.4; vs 18% ↓ w/placebo; 3.2x>)
* ↓ serum homocystine 57% (from 49.4 → 21.5; vs 25% ↑ w/placebo; 3x>)



** Statistically Significant in Publication*

DENTAL / ORAL HEALTH

DETAILS

Title: The antiplaque efficacy of pomegranate mouthrinse.

Design: randomized, single-blinded, controlled, parallel 3-arm study

Dose: Pomella® mouth rinse, chlorhexidinemouth rinse, or distilled water mouth rinse (placebo) twice daily

Duration: 4 days

Size: n=30 (17-28 years) healthy volunteers

Reference: JB et al. The antiplaque efficacy of pomegranate mouthrinse. Quintessence Int. 2015. 42(1): 29-36. Poster presentation.

SUMMARY

- Pomella showed inhibition of all three strains of periodontal pathogens: *Aggregatibacter actinomycetemcomitans* (Aa), *Porphyromonas gingivalis* (Pg), and *Prevotella intermedia* (Pi) at various concentrations
- * There was a statistically significant difference (P< 0.05) between the Pomella and the placebo and between the chlorhexidine and placebo rinse with respect to plaque index

No adverse effects were reported by any of the participants

Title: Pomegranate extract mouth rinsing effects on saliva measures relevant to gingivitis risk.

Design: randomized, single-blinded controlled trial

Dose: Pomella® Extract or placebo at 100mg/day divided into 3 sub-doses, each dissolved in 35mL of deionized, distilled water

Duration: 4 weeks

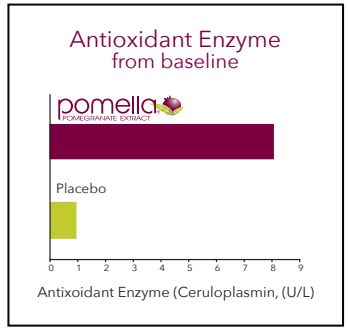
Size: n=30 (19-25 years) healthy, non-smoking young adults

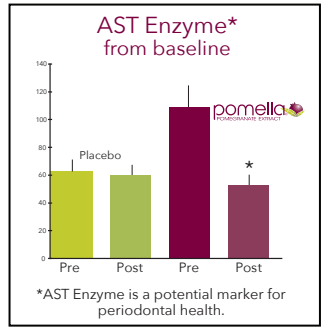
Reference: DiSilvestro RA et al. Pomegranate extract mouth rinsing effects on saliva measures relevant to gingivitis risk. Phyther Res. 2009. 23(8): 1123-1127.

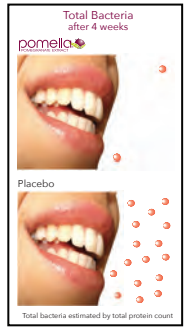
Mouth rinsing with Pomella:

- Reduced total protein content (can be higher in people with gingival problems than in people without problems) compared to placebo
- Lowered saliva activities of alpha-glucosidase
- Increased activities of ceruloplasmin
- Increased total antioxidant status

No adverse effects were reported by any of the participants







** Statistically Significant in Publication*

GUT & SKIN HEALTH - BEAUTY FROM WITHIN

DETAILS

Title: Prospective randomized double-blind placebo-controlled study of oral pomegranate extract [Pomella®] on skin wrinkles, biophysical features, and the gut-skin axis.

Design: randomized, double-blind, placebo-controlled trial

Dose: 250mg Pomella® Extract once a day

Duration: 4 weeks

Size: n=18 healthy males and females (25-55 years)

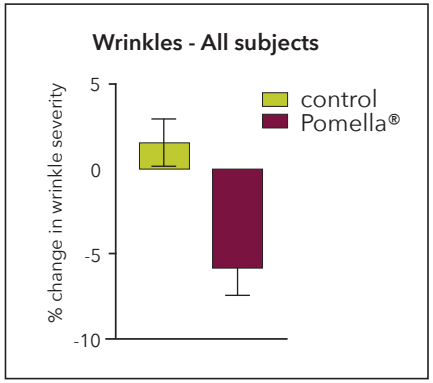
Reference: Chakkalakal M et al. Prospective randomized double-blind placebo-controlled study of oral pomegranate extract [Pomella®] on skin wrinkles, biophysical features, and the gut-skin axis. J Clin Med. 14 Nov 2022. 11(22): 6724. doi: 10.3390/jcm11226724

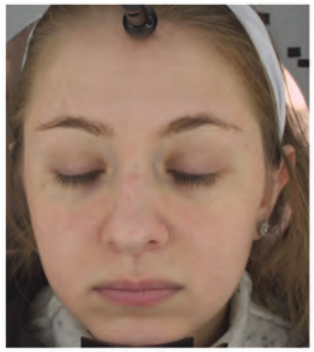
† Poster reference:

- *Chakkalakal M et al. Prospective randomized double-blind placebo-controlled study of oral pomegranate extract [as Pomella®] on skin health, skin microbiome, and influence on the gut-skin axis. 2022 Sept. Presented at the Integrative Dermatology Symposium, September 2022, Tucson, AZ.*

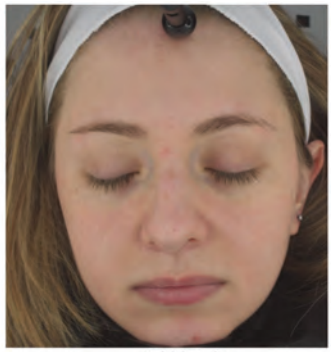
SUMMARY

* A statistically significant decrease in facial wrinkle severity by 6.2% ± 1.6% was noted in the Pomella® group (**p<0.004) compared to 1± 1.4% in the control
* The facial skin microbiome was augmented for the *Bacillus* genus and *Staphylococcus epidermidis* after Pomella® supplementation
- *Roseburia faecis, Coprococcus eutactus,* and *Faecalibacterium prausnitzii* were significantly enriched at 4 weeks of intervention in the Pomella® group compared to the control
- Short-chain fatty acids (SCFAs) shifted in the Pomella® group with a 38%↑(vs 1.8%↓in placebo) in acetates & 162%↑(vs 0.1%↑in placebo) in propionates
- The Pomella® extract group had a trend to increase urolithin A concentrations by 6.6%





Baseline



4 Weeks

** Statistically Significant in Publication*

GUT & SKIN HEALTH - BEAUTY FROM WITHIN

DETAILS

Title: Prospective randomized, double-blind, placebo-controlled study of a standardized oral pomegranate extract on the gut microbiome and short-chain fatty acids.

Design: randomized, double-blind, placebo-controlled trial

Dose: 250mg Pomella® Extract once a day

Duration: 4 weeks

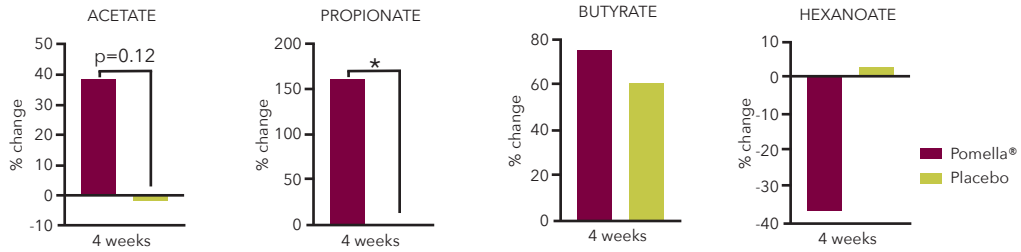
Size: n=18 healthy men and women (25-55yrs)

Reference: Sivamani RK et al. Prospective randomized, double-blind, placebo-controlled study of a standardized oral pomegranate extract on the gut microbiome and short-chain fatty acids. Foods. 2023 Dec 19. 13(1): 15pgs. doi: 10.3390/foods13010015

SUMMARY

Pomella® (250mg/day) was evaluated in healthy men and women 25-55yrs (n=18, predominantly women) for beneficial effects on the gut microbiome, circulating short-chain fatty acids, and gut-microbial derived ellagitannin metabolites, namely urolithins. Pomella®, led to significant shifts in the gut microbiota, increases the circulating plasma levels of short-chain fatty acids such as propionate and acetate, and increases the plasma levels of urolithin A levels. Results showed the functional analyses of the gut correlates with circulating SCFAs and further supporting the notion that Pomella® supplementation augments circulating SCFAs through modulation of the gut microbiome as one of the mechanisms. Overall, findings suggest that Pomella® pomegranate extract consumption supports a healthier gut and gut–body communication.

* There were notable differences in short-chain fatty acids (SCFAs) before and after Pomella® extract supplementation, with a 162% increase in the propionate level (p = 0.02) and a 38% increase in the acetate level (p = 0.12) after Pomella® supplementation
* There was an increase in species such as *Coprococcus eutectus, Roseburia faecis, Roseburia inullnivorans, Ruminococcus bicirculans, Ruminococcus calidus, Faecalibacterium prausnitzii, Methanobrevibacter smithii,* and *Collinsella aerofaciens* in the Pomella® cohort, which indicates that pomegranate ellagitannins induce shifts in the bacteria that may influence overall health through the modulation of short-chain fatty acids, secondary metabolites, and urolithin A synthesis
* Pomella® augmented the genes for the synthesis of several key amino acids and supported a catabolic state (energy-yielding metabolism) for the TCA cycle; the TCA cycle, tricarboxylic acid cycle, also known as the Krebs' cycle or citric acid cycle, is the major energy-yielding metabolic pathway in cells which produces adenosine triphosphate (ATP). This has potential to impact mitochondrial and cellular health alongside adding mechanistic insight into previously reported findings supporting cardio-metabolic health
* Pomella® augmented the gene for the super pathway of sulfur amino acid biosynthesis which is specific to the activity of *Saccharomyces cerevisiae*; this was a particularly interesting find given *Saccharomyces'* biotherapeutic probiotic potential for gastrointestinal issues



** Statistically Significant in Publication*

ABSORPTION

DETAILS

Title: Absorption, metabolism, and antioxidant effects of pomegranate (*Punica granatum* L) polyphenols after ingestion of a standardized extract in healthy human volunteers.

Design: open label human bioavailability study

Dose: 800mg Pomella® Extract

Size: n=11 healthy men and women (37.6 ± 3.6yrs)

Reference: Mertens-Talcott SU et al. Absorption, metabolism, and antioxidant effects of pomegranate (*Punica granatum* L) polyphenols after ingestion of a standardized extract in healthy human volunteers. J Agric Food Chem. 2006. 54(23): 8956-8961.

SUMMARY

- Results indicate that ellagic acid (EA) from the Pomella is bioavailable, with an observed Cmax of 33ng/mL at Tmax of 1hr
- The plasma metabolites urolithin A, urolithin B, hydroxyl-urolithin A, urolithin A-glucuronide, and dimethyl ellagic acid-glucuronide were identified by HPLC-MS
- The bioavailability of ellagic acid (EA) derivatives of ellagitannins from Pomella® is comparable to those found in previous studies for pomegranate juice at the administered doses
- AUC (area under the curve), MRT (mean residence time), and terminal half-life were estimated as 118.01ng hr/mL, 5.5hr, and 0.942hr, respectively
- 31.8% increase in the antioxidant capacity of plasma 0.5hr after the consumption of Pomella® Extract

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Title: Development of a liquid chromotography-tandem mass spectrometry (LC-MS/MS) method for characterizing pomegranate extract pharmacokinetics in humans.

Design: two-cohort, crossover pharmacokinetic study

Dose: 250mg / 1000mg Pomella® Extract

Size: n=10/cohort healthy men and women

Reference: Wang YH et al. Development of a liquid chromotography-tandem mass spectrometry (LC-MS/MS) method for characterizing pomegranate extract pharmacokinetics in humans. J J Pharmaceut Biomed Analysis. 2023 May. 233(2023): 115477.

At The National Center for Natural Products Research (NCNPR), University of Mississippi, this study investigated the oral pharmacokinetics of ellagitannins in Pomella® and gut microbiota-derived urolithin metabolites. Using advanced ultra-high performance liquid chromatography-tandem mass spectrometry (UHPLC-MS/MS), the research focused on punicalagin and gut microbiota-derived urolithin metabolites (urolithin A (UA) and B (UB)) in two different dose cohorts (250mg and 1000mg) over 48 hours, analyzing plasma samples for ellagic acid (EA), UA, and UB in their conjugated and unconjugated forms.

- The study demonstrated that punicalagins rapidly metabolize to ellagic acid, which is rapidly absorbed and conjugated after oral administration
- The conjugated ellagic acid exposure was approximately 5 to 8 times higher than unconjugated EA for both dose groups
- Appearance of UA conjugates after approximately 8h is consistent with gut microbiota-mediated transformation of punicalagins to ellagic acid to urolithins
- UA conjugates were detectable up to 48h post-administration and displayed a half life of ~24h
- The research showed a dose-dependent response in the conjugated forms of ellagic acid and urolithin A, with the 1000mg dose group exhibiting ~2-fold increase in area under the curve compared to the 250mg group
- AUC (area under the curve), was estimated as 38 vs 63 ng hr/mL for ellagic acid and 848.5 vs 1738 ng hr/mL for urolithin A

** Statistically Significant in Publication*