Occurrence of urolithins, gut microbiota ellagic acid metabolites and proliferation markers expression response in the human prostate gland upon consumption of walnuts and pomegranate juice.


Research Group on Quality, Safety and Bioactivity of Plant Foods, Department of Food Science and Technology, CEBAS-CSIC, Murcia, Spain.

Abstract

Epidemiology supports the important role of nutrition in prostate cancer (PCa) prevention. Pomegranate juice (PJ) exerts protective effects against PCa, mainly attributed to PJ ellagitannins (ETs). Our aim was to assess whether ETs or their metabolites ellagic acid and urolithins reach the human prostate upon consumption of ET-rich foods and to evaluate the effect on the expression of three proliferation biomarkers. Sixty-three patients with BPH or PCa were divided into controls and consumers of walnuts (35 g walnuts/day) or pomegranate (200 mL PJ/day) for 3 days before surgery. Independently of the ETs source, the main metabolite detected was urolithin A glucuronide, (3,8-dihydroxy-6H-dibenzo[b,d]pyran-6-one glucuronide) (up to 2 ng/g) together with the traces of urolithin B glucuronide, (3-hydroxy-6H-dibenzo[b,d]pyran-6-one glucuronide) and dimethyl ellagic acid. The small number of prostates containing metabolites was likely caused by clearance of the compounds during the fasting. This was corroborated in a parallel rat study and thus the presence of higher quantities of metabolites at earlier time points cannot be discarded. No apparent changes in the expression of CDKN1A, MKi-67 or c-Myc were found after consumption of the walnuts or PJ. Our results suggest that urolithin glucuronides and dimethyl ellagic acid may be the molecules responsible for the beneficial effects of PJ against PCa.

PMID: 19885850 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Substances

Substances:
- CDKN1A protein, human
- Coumarins
- Cyclin-Dependent Kinase Inhibitor p21
- Hydrolyzable Tannins
- Intracellular Signaling Peptides and Proteins
- MKI67IP protein, human
- MYC protein, human
- Nuclear Proteins
- Plant Extracts
- Proto-Oncogene Proteins c-myc
- RNA, Messenger
- Tumor Markers, Biological
- 3,8-dihydroxy-6H-dibenzo(b,d)pyran-6-one
- Ellagic Acid

**LinkOut - more resources**

**Full Text Sources:**
- John Wiley & Sons, Inc.
- EBSCO
- OhioLINK Electronic Journal Center
- Swets Information Services

**Medical:**
- Prostate Cancer - MedlinePlus Health Information

**Supplemental Content**

**Related citations**
- **Pomegranate ellagitannin-derived metabolites inhibit prostate cancer growth and localize to the mouse prostate gland.** [J Agric Food Chem. 2007]
  
  Pomegranate ellagitannin-derived metabolites inhibit prostate cancer growth and localize to the mouse prostate gland.


- **Pomegranate juice and extracts provide similar levels of plasma and urinary ellagitannin metabolites in human subjects.** [J Med Food. 2008]
  
  Pomegranate juice and extracts provide similar levels of plasma and urinary ellagitannin metabolites in human subjects.


- **Pomegranate juice ellagitannin metabolites are present in human plasma and some persist in urine for up to 48 hours.** [J Nutr. 2006]
  
  Pomegranate juice ellagitannin metabolites are present in human plasma and some persist in urine for up to 48 hours.
Review Ellagic acid, pomegranate and prostate cancer -- a mini review. [J Pharm Pharmacol. 2008]

Bell C, Hawthorne S. J Pharm Pharmacol. 2008 Feb; 60(2):139-44.

Review Multitargeted therapy of cancer by ellagitannins. [Cancer Lett. 2008]


All links from this record

Related Citations
Calculated set of PubMed citations closely related to the selected article(s) retrieved using a word weight algorithm. Related articles are displayed in ranked order from most to least relevant, with the â€œlinked fromâ€• citation displayed first.

Compound (MeSH Keyword)
PubChem chemical compound records that are classified under the same Medical Subject Headings (MeSH) controlled vocabulary as the current articles.

Substance (MeSH Keyword)
PubChem chemical substance (submitted) records that are classified under the same Medical Subject Headings (MeSH) controlled vocabulary as the current articles.

Recent activity

Occurrence of urolithins, gut microbiota ellagic acid metabolites and proliferation markers expression response in the human prostate gland upon consumption of walnuts and pomegranate juice.

Pomegranate juice and extracts provide similar levels of plasma and urinary ellagitannin metabolites in human subjects.

Bioavailability of ellagic acid in human plasma after consumption of ellagitannins from pomegranate (Punica granatum L.) juice.

Ellagitannins of the fruit rind of pomegranate (Punica granatum) antagonize in vitro the host inflammatory response mechanisms involved in the onset of malaria

Dietary Berries and Ellagic Acid Prevent Oxidative DNA Damage and Modulate
Dietary Berries and Ellagic Acid Prevent Oxidative DNA Damage and Modulate Expression of DNA Repair Genes