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a. The effects of catechins on related risk factors with type 2 diabetes: a review

https://medicaldialogues.in/neurology-neurosurgery/news/inflammatory-bowel-disease-linked-to-doubling-in-dementia-risk-67009

A Catechin‐rich Beverage Improves Obesity and Blood Glucose Control in Patients With Type 2 Diabetes Tomonori Nagao , Shinichi Meguro, Tadashi Hase, Kazuhiro Otsuka, Masanori Komikado, Ichiro Tokimitsu, Takashi Yamamoto, Kunio Yamamoto, Meysam Alipour1, Reza Malihi2, Seyed Ahmad Hosseini3, Amir Abbasnezhad4, Abed Ghavami5, Hedayat Allah Shahmohammadi6, Matin Ghanavati7

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Summary. Insulin resistance in patients with diabetes mellitus causes complications such as cardiovascular and renal diseases. Studies have shown that catechins can be effective in controlling hyperglycemia and preventing the complications of diabetes by improving insulin sensitivity and reducing the risk factors for Type 2 Diabetes Mellitus such as oxidative stress, dyslipidemia and obesity. The aim of the present study is a review of the studies conducted in the field of the effect of catechins on the improvement of the risk factors associated with Type 2 Diabetes Mellitus. This review study was conducted by searching in th e databases of Science Direct, Scopus, PubMed and using the keywords, such as catechins, green tea, insulin resistance, diabetes mellitus, hyperglycemia, obesity, dyslipidemia and oxidative stress. In this study, articles published between the years 2000-2016, were used. The results of the review of the studies showed that the catechins and food containing them can improve hyperglycemia, oxidative stress, dyslipidemia and obesity in patients with Type 2 Diabetes Mellitus. Key words: catechin, Diabetes Mellitus Type 2, dyslipidemia, obesity, oxidative stress

Type 2 diabetes

Description

A chronic condition that affects the way the body processes blood sugar (glucose). With type 2 diabetes, the body either doesn't produce enough insulin, or it resists insulin. Symptoms include increased thirst, frequent urination, hunger, fatigue and blurred vision. In some cases, there may be no symptoms. Treatments include diet, exercise, medication and insulin therapy

b. Natural therapies assessment for the treatment of endometriosis

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Study question: Can resveratrol and epigallocatechin-3-gallate (EGCG) inhibit the growth and survival of endometriotic-like lesions in vivo in a BALB/c model of endometriosis, and in vitro in primary cultures of human endometrial epithelial cells (EECs)?

Summary answer: Resveratrol and EGCG exerted a potent inhibitory effect on the development of endometriosis in a BALB/c murine model and on the survival of EECs. What is known already: Endometriosis is a common condition associated with infertility and pelvic pain in women of reproductive age. Resveratrol and EGCG are two polyphenols with anticarcinogenic and antioxidant properties that have been proposed as natural therapies to treat endometriosis. Study design, size, duration: Fifty-six 2-month-old female BALB/c mice underwent surgical induction of endometriosis. Treatments with resveratrol or EGCG started 15 days post-surgery and continued for 4 weeks. Human biopsies were taken with a metal Novak curette from the posterior uterine wall from 16 patients with untreated endometriosis and 15 controls who underwent diagnostic laparoscopy for infertility. materials, setting,

Methods: After the treatments, animals were sacrificed and lesions were counted, measured, excised and fixed.

Immunohistochemistry for proliferating cell nuclear antigen and CD34 was performed for cell proliferation and vascularization assessment in the lesions. The terminal deoxynucleotidyl transferase (TdT)-mediated dUTP nick-end labeling (TUNEL) technique was performed for apoptosis evaluation. Peritoneal fluid was collected to analyze vascular endothelial growth factor levels. Human EECs were purified from proliferative-phase endometrial biopsies and cultured. The effect of both polyphenols on cell proliferation was determined by a colorimetric assay using the CellTiter 96wAQueous One Solution Cell Proliferation Assay kit and on apoptosis by the TUNEL technique, using an In Situ Cell Death Detection Kit with Fluorescein. main results: In the mouse model, both treatments significantly reduced the mean number (P , 0.05 versus control) and the volume of established lesions (P , 0.05 versus control). Treatments consistently statistically significantly diminished cell proliferation (resveratrol P , 0.01 and EGCG P , 0.05, versus control), reduced vascular density (resveratrol P , 0.01 and EGCG P , 0.001, versus control) and increased apoptosis within the lesions (resveratrol P, 0.01 and EGCG P, 0.05, versus control). Both compounds induced reduction in human EEC proliferation (P , 0.05 versus basal) and increased apoptosis (P , 0.05 versus basal) in primary cultures. limitations: In vitro studies were only carried out in epithelial cells from human eutopic endometrium. wider implications of the findings: The present findings are promising and will assist the development of novel natural treatments for endometriosis.

Study funding: This study was supported by ANPCYT (PICT 6384 BID 1201 OC-AR) and CONICET (PIP 5471), Argentina. None of the authors has any conflict of interest to declare.

Key words: endometriosis / resveratrol / EGCG / human eutopic endometrium / BALB/c mice

c. Manfaat lain dari katekin

 The Role Of Catechins In Cellular Responses To Oxidative Stress

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The Role of Catechins in Cellular Responses to Oxidative Stress

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Abstract: Catechins are polyphenolic compounds—flavanols of the flavonoid family found in a variety of plants. Green tea, wine and cocoa-based products are the main dietary sources of these flavanols. Catechins have potent antioxidant properties, although in some cases they may act in the cell as pro-oxidants. Catechins are reactive oxygen species (ROS) scavengers and metal ion chelators, whereas their indirect antioxidant activities comprise induction of antioxidant enzymes, inhibition of pro-oxidant enzymes, and production of the phase II detoxification enzymes and antioxidant enzymes. Oxidative stress and ROS are implicated in aging and related dysfunctions, such as neurodegenerative disease, cancer, cardiovascular diseases, and diabetes. Due to their antioxidant properties, catechins may be beneficial in preventing and protecting against diseases caused by oxidative stress. This article reviews the biochemical properties of catechins, their antioxidant activity, and the mechanisms of action involved in the prevention of oxidative stress-caused diseases. Keywords: catechin; ROS; cancer; cardiovascular diseases; neurodegenerative disorders

 Trends In Food Science & Technology Volume 17, Issue 2, February 2006, Pages 64-71

Review

Novel uses of catechins in foods

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Catechins are flavanols present in a variety of foods such as wine, tea, fruits and chocolate. Catechin, epicatechin and gallates of epicatechin are major catechins with dietary importance for human health. In recent years, catechins have been used as natural antioxidant in oils and fats against lipid oxidation, supplement for animal feeds both to improve animal health and to protect animal products, an antimicrobial agent in foodstuffs and a health functional ingredient in various foods and dietary supplements. This review outlines the novel uses of catechins in foods.

 Catechins And Their Therapeutic Benefits To Inflammatory Bowel Disease

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Abstract: Catechins are natural polyphenolic phytochemicals that exist in food and medicinal plants, such as tea, legume and rubiaceae. An increasing number of studies have associated the intake of catechins-rich foods with the prevention and treatment of chronic diseases in humans, such as inflammatory bowel disease (IBD). Some studies have demonstrated that catechins could significantly inhibit the excessive oxidative stress through direct or indirect antioxidant effects and promote the activation of the antioxidative substances such as glutathione peroxidases (GPO) and glutathione (GSH), reducing the oxidative damages to the colon. In addition, catechins can also regulate the infiltration and proliferation of immune related-cells, such as neutrophils, colonic epithelial cells, macrophages, and T lymphocytes, helping reduce the inflammatory relations and provide benefits to IBD. Perhaps catechins can further inhibit the deterioration of intestinal lesions through regulating the cell gap junctions. Furthermore, catechins can exert their significant anti-inflammatory properties by regulating the activation or deactivation of inflammation-related oxidative stress-related cell signaling pathways, such as nuclear factor-kappa B (NF-κB), mitogen activated protein kinases (MAPKs), transcription factor nuclear factor (erythroid-derived 2)-like 2 (Nrf2), signal transducer and the activator of transcription 1/3 (STAT1/3) pathways. Finally, catechins can also stabilize the structure of the gastrointestinal micro-ecological environment via promoting the proliferation of beneficial intestinal bacteria and regulating the balance of intestinal flora, so as to relieve the IBD. Furthermore, catechins may regulate the tight junctions (TJ) in the epithelium. This paper elaborates the currently known possible molecular mechanisms of catechins in favor of IBD.

Keywords: catechins; inflammatory bowel disease; oxidative stress; mechanisms; tight junction functionality

 Human Salivary Tea Catechin Levels And Catechin Esterase Activities: Implication In Human Cancer Prevention Studies

Abstract

Because of the possible application of tea in the prevention of oral and esophageal cancers, the salivary levels of tea catechins were determined in six human volunteers after drinking tea. Saliva samples were collected after thoroughly rinsing the mouth with water. After drinking green tea preparations equivalent to two to three cups of tea, peak saliva levels of (−)-epigallocatechin (EGC; 11.7–43.9 μg/ml), EGC-3-gallate (EGCG; 4.8–22 μg/ml), and (−)-epicatechin (EC; 1.8–7.5 μg/ml) were observed after a few minutes. These levels were 2 orders of magnitude higher than those in the plasma. The elimination half-life (t1/2) of the salivary catechins was 10–20 min, much shorter than that of the plasma. Holding a tea solution in the mouth for a few minutes without swallowing produced even higher salivary catechin levels, but taking tea solids in capsules resulted in no detectable salivary catechin level. Holding an EGCG solution in the mouth resulted in EGCG and EGC in the saliva and, subsequently, EGC in the urine. The results suggest that EGCG was converted to EGC in the oral cavity, and both catechins were absorbed through the oral mucosa. A catechin esterase activity that converts EGCG to EGC was found in the saliva. The enzyme was likely of human origin, but the activity was not inhibited by common human esterase inhibitor. The present results suggest that slowly drinking tea is a very effective way of delivering rather high concentrations of catechins to the oral cavity and then the esophagus.

Chung S. Yang, Mao-Jung Lee and Laishun Chen

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