Royal jelly

*Antioxidant properties of enzymatic hydrolysates from royal jelly.*

J Med Food 2006 Fall;9(3):363-7 (ISSN: 1096-620X)

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Enzymatic hydrolysates were prepared from royal jelly using three enzymes (pepsin, trypsin, and papain), and their antioxidative properties were evaluated. The yield of these hydrolysates was very high, about 20-26% on a raw weight basis. In comparison with the antioxidative activities of water extract and alkaline extract of royal jelly, the antioxidative activities and scavenging activities against active oxygen species such as superoxide anion radical and hydroxyl radical of each hydrolysate were high in the sample with a low protein concentration. These results suggest that once royal jelly is hydrolyzed using enzyme, the hydrolysate possesses much higher antioxidative activity and scavenging activity against active oxygen species. Royal jelly will act as a medicinal food in the human body.

*Effects of an herbal medication containing bee products on menopausal symptoms and cardiovascular risk markers: results of a pilot open-uncontrolled trial.*

MedGenMed 2004;6(4):46 (ISSN: 1531-0132)

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OBJECTIVES: Fifty-five postmenopausal women with menopausal complaints were treated with the food supplement Melbrosia for 3 months. Menopausal symptom evaluation scales and psychological questionnaires were administered, and cardiovascular disease markers in blood were analyzed at the beginning and the end of the trial. SETTING: The perimenopausal care unit of Second Obstetrics and Gynecology Hospital, Sofia, Bulgaria. DESIGN: The study was an open, multicenter, uncontrolled, prospective observation study. The subjective symptoms questionnaires administered before Melbrosia treatment and after 3 months of treatment were Kupperman Score, Zerssen Symptom List, Zung Depression Score, and Frankfurt Self-concept Scale (self-assessment test, problem-solving test, self-esteem test, and irritability test). The blood levels of high-density lipoproteins (HDL), low-density lipoproteins (LDL), triglycerides (TG), total cholesterol (TC), vascular cell adhesion molecule-1 (VCAM-1), and C-reactive protein (CRP) levels were measured in a subgroup of patients. RESULTS: Treatment of postmenopausal women with Melbrosia led to a statistically significant reduction in the Kupperman score, Zerssen's Symptoms List, and Zung Depression Score. The Frankfurt Self-concept Scale revealed significant improvement in problem-solving, no change in self-assessment and self-esteem, and worsening of irritability. Treatment with Melbrosia significantly reduced TC and LDL and significantly elevated HDL and TG. There were nonsignificant changes of serum VCAM-1 and CRP levels in patients treated with Melbrosia. CONCLUSIONS: The presented data suggest that Melbrosia may offer a potential alternative to hormone therapy for the treatment of menopausal symptoms. However, because of this study's uncontrolled, open-label methodology, no
cause-and-effect inferences can be drawn until a larger, longer-term, blinded, placebo-controlled, randomized clinical trial is performed.

**Royal Jelly-Mediated Prolongevity and Stress Resistance in Caenorhabditis elegans Is Possibly Modulated by the Interplays of DAF-16, SIR-2.1, HCF-1, and 14-3-3 Proteins.**


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Recent studies suggest that royal jelly (RJ) and its related substances may have antiaging properties. However, the molecular mechanisms underlying the beneficial effects remain elusive. We report that the effects of RJ and enzyme-treated RJ (eRJ) on life span and health span in Caenorhabditis elegans (C elegans) are modulated by the sophisticated interplays of DAF-16, SIR-2.1, HCF-1, and 14-3-3 proteins. Dietary supplementation with RJ or eRJ increased C. elegans life span in a dose-dependent manner. The RJ and eRJ consumption increased the tolerance of C elegans to oxidative stress, ultraviolet irradiation, and heat shock stress. Our genetic analyses showed that RJ/eRJ-mediated life-span extension requires insulin/IGF-1 signaling and the activities of DAF-16, SIR-2.1, HCF-1, and 14-3-3 proteins. Earlier studies reported that DAF-16/FOXO, SIR-2.1/SIRT1, FTT-2, and HCF-1 have extensive interplays in worms and mammals. Our present findings suggest that RJ/eRJ-mediated promotion of longevity and stress resistance in C elegans is dependent on these conserved interplays. From an evolutionary point of view, this study not only provides new insights into the molecular mechanisms of RJ's action on health span promotion in C elegans, but also has imperative implications in using RJ/eRJ as nutraceuticals to delay aging and age-related disorders.
Effect of royal jelly ingestion for six months on healthy volunteers.


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BACKGROUND: Royal jelly is a widely ingested supplement for health, but its effects on humans are not well known. The objective was to evaluate the effects of long-term royal jelly ingestion on humans. METHODS: We conducted a randomized placebo-controlled, double-blind trial. A total of 61 healthy volunteers aged 42-83 years were enrolled and were randomly divided into a royal jelly group (n = 31) and a control group (n = 30). Three thousand mg of royal jelly (RJ) or a placebo in 100 ml liquid/day were ingested for 6 months. The primary outcomes were changes in anthropometric measurements and biochemical indexes from baseline to 6 months after intervention. RESULTS: Thirty subjects in the RJ group and 26 in the control group were included in the analysis of endpoints. In an adjusted mean change of the variables from the baseline, significant differences between the two groups could be found in red blood cell counts (+0.16x10^6 /µL for the RJ group vs. -0.01x10^6 /µL for the control group, P = 0.0134), hematocrit (+0.9% vs. -0.8%, P = 0.0251), log (fasting plasma glucose) (+0.01 ± 0.01 log mg/dL vs. +0.05 ± 0.01 log mg/dL, P = 0.0297), log (insulinogenic index) (+0.25 vs. -0.13, P = 0.0319), log dehydroepiandrosterone sulfate (DHEA-S) (+0.08 log µg/dL vs. +0.20 log µg/dL, P = 0.0483), log testosterone (T) (+0.12 ± 0.04 log ng/mL vs. -0.02 ± 0.05 log ng/mL, P = 0.0416), log T/DHEA-S ratio (+0.05 ± 0.05 vs. -0.23 ± 0.59, P = 0.0015), and in one of the SF-36 subscale scores, mental health (MH) (+4 vs. -7, P = 0.0276). CONCLUSIONS: Six-month ingestion of RJ in humans improved erythropoiesis, glucose tolerance and mental health. Acceleration of conversion from DHEA-S to T by RJ may have been observed among these favorable effects.