

**ARTICLE (6)**  
**ROYAL JELLY AND MALE INFERTILITY**  
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Royal jelly (RJ) is the exclusive food of the queen honeybee (*Apis mellifera*) larva. Compared with the short-lived and infertile worker bees, the queen bee, which is exclusively fed RJ, is characterized by her extended lifespan and her well-developed gonads (it develops the queen bee gonads). Therefore, RJ has been long-used as a supplement for nutrition, anti-aging and infertility. Chemically, royal jelly comprises water (50% to 60%), proteins (18%), carbohydrates (15%), lipids (3 to 6%), mineral salts (1.5%), and vitamins together with many bioactive substances. Based on modern spectrometric analysis, approximately 185 organic compounds have been detected in royal jelly (**Visweswara Rao Pasupuleti et al. 2017**). Biological activities of royal jelly are mainly attributed to the phenolic compounds such as flavonoids. Phenolic compounds in their many forms are the main components responsible for the functional properties (such as antioxidant capacity), associated with many foods.

During recent years, functional foods have attracted growing attention because of consumers' increasing concerns about their health. Honey and other bee products, such as royal jelly and propolis may be used as functional foods because of their naturally high antioxidant contents (**Viuda-Martos et al. 2008**). In 2015, Health Canada (HC), based on available evidence on the efficacy of Royal jelly as an antioxidant, published a monograph on RJ. HC recommends up to 6 g royal jelly, per day as an antioxidant.

1. **Visweswara Rao Pasupuleti et al. Honey, Propolis, and Royal Jelly: A Comprehensive Review of Their Biological Actions and Health Benefits. Oxidative Medicine and Cellular Longevity. Volume 2017, Article ID 1259510, 21 pages**
2. **Viuda-Martos M et al. Functional properties of honey, propolis, and royal jelly. Journal of Food Science. Volume 73, Issue 9, pages R117-R124, November/December 2008.**

The following are a brief description of few publications on the relationship between Royal Jelly supplementation and male infertility.

**1. CLINICAL: A RANDOMIZED PLACEBO-CONTROLLED, DOUBLE-BLIND TRIAL**

In this 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 conclusion is that six-month ingestion of RJ in humans improved erythropoiesis, glucose tolerance and mental health. Also, it has been found that RJ may have induced the conversion of DHEA-S to Testosterone

**Morita et al. Effect of royal jelly ingestion for six months on healthy volunteers. Nutrition Journal 2012, 11:77**

2. **CLINICAL**

Eighty-three infertile men were treated with Royal Jelly (RJ), twenty-two with 100 mg Royal Jelly, twenty-one with 50 mg RJ, twenty with 25 mg RJ and twenty with pure honey. The study showed that, the treatments were safe and there were no side effects. After three months of treatment, the sperm active motility, testosterone level, Lutelizing hormones level, sluggishly motile sperm and intercourse / week increased significantly in infertile men treated with Royal Jelly, while sperm count and FSH level increased not significantly. Based on results, Royal Jelly is safe and effective in the treatment of male infertility.

**Ali E. Al-Sanafi et al. Effect of Royal Jelly on male Infertility. Thi-Qar Medical Journal (TQMJ): Vol (1); NO (1); 2007(1-12).**

3. **CLINICAL**

This study is to evaluate the efficacy of pericoital intravaginal applications of a mixture of Egyptian bee honey and royal jelly (H/RJ) in the midcycle for the treatment of infertility due to asthenozoospermia.

Sohag University Hospital and Asyut Gynecology and Infertility Clinic conducted a crossover study of 99 couples affected by asthenozoospermia. One group used midcycle pericoital vaginal applications of H/RJ and the other underwent a standard intrauterine insemination (IUI) procedure, for 3 cycles or until conception occurred for both groups. After a washout period of 2 months, the couples for whom no pregnancy occurred were crossed over.

A total of 553 cycles were analyzed. There were 23 (8.1%) and 7 (2.6%) pregnancies per cycle, respectively, in the H/RJ and the IUI groups, and the difference was statistically significant ( $P < 0.001$ ). Authors concluded that using H/RJ intravaginally might be a simple and reasonably effective method of treating asthenozoospermia.

**Abdelhafiz AT and Muhamad JA. Midcycle pericoital intravaginal bee honey and royal jelly for male factor infertility. Int J Gynaecol Obstet. 2008 May;101(2):146-9.**

4. **MONOGRAPH: HEALTH CANADA**

In 2015, Health Canada based on several scientific publications (Karadeniz et al. 2011; Silici et al. 2011; Viuda-Martos et al. 2008; El-Nekeety et al. 2007; Guo et al. 2007), published a monograph on Royal Jelly. In the monograph, HC approved the use of RJ as a source of Antioxidants. Health Canada approved a dose for adults ( $\geq 18$  years) of up to six grams of royal jelly, per day.

Readers interested to learn on the relationship between Antioxidants supplementation and fertility may go back to article one).