Effects of Gelam Honey on Sperm Quality and Testis of Rat
(Kesan Mada Gelam ke atas Kualiti Sperma dan Testis Tikus)

N.S. SYAZANA, N.H. HASHIDA*, A.M. MAJID, H.A. DURRIYYAH, S.M. SHERIF, & M.Y. KAMARUDDIN

ABSTRACT

The present study aimed to elucidate the possible protective effects of Gelam honey on sperm quality and testis histology against infertility related problems. Control and treated groups of 4-5 weeks old male Sprague-Dawley rats were force-fed daily with 1.0 mL/100 g body weight of normal saline (0.9%) and Gelam honey, respectively. After 60 days of treatments, reproductive organs of the anesthetized rats were removed to assess sperm parameters and histology of testis. Sperm count of treated group was significantly higher (18.85±3.72×10^6/mL) than control group (17.05±3.12×10^6/mL) (p<0.05). Based on sperm morphology, treated group showed significantly higher percentage of normal sperm (96.83±0.03%) as compared to control group (94.87±0.01%) (p<0.01). Head and tail abnormalities sperm were also significantly reduced in the treated rats (p<0.05). The number of spermatogenic cells in testis of treated group were abundant as compared to control group. Seminiferous tubules of treated group were densely packed with spermatogenic cells with small lumen filled up with sperm tail. This study suggested that Gelam honey has the potential to increase the fertility of male rats by increasing sperm count and number of sperm with normal morphology.

Keywords: Honey; sperm quality; Sprague Dawley rats; testis histology

INTRODUCTION

Environmental, physiological and genetic factors have been shown to have defective effects on male reproductive performance (Pizzi et al. 2000; Petrelli & Mantovani 2007). Honey with its nutrient rich content, e.g. sugars such as fructose and glucose, minerals such as magnesium, potassium, calcium, sodium chloride, sulphur, iron and phosphates; as well as vitamins B1, B2, C, B6, B5 and B3 (Estevinho et al. 2008), is a candidate of being a reproductive health protection substance. The great Muslim physician, Ibn Sinu (980 – 1037) in his world-famous medical textbook “The Canon of Medicine” reported the benefits of honey for treatment of various diseases and maintenance of health (Kamaruddin 2003) and due to its antibacteria, antioxidant and wound healing properties (Aljady et al. 2000). In Arab countries honey is considered to increase human male potency. It had been reported that honey increased spermatogenesis in rats (Abdul-Ghani et al. 2008). Abdulhafiz and Muhammad (2008) observed in vitro that diluted Egyptian bee honey and royal jelly had an enhancing effect on sperm motility, particularly in abnormal samples. Propolis was found to significantly increase testosterone level, body weight, relative weight of testis, relative weight of epididymis, semen characteristics and seminal plasma enzymes and decreased the levels of free radicals and lactate dehydrogenase (Yousef et al. 2010). A preliminary study involving a local Malaysian honey, Rudong honey, proposed that honey could enhance...