Effect of Habbatussauda (*Nigella sativa*) Extract on Rat Sperm Count (*Rattus norvegicus*)

Muhammad Ja’far Luthfi*, Hikmah Supriyati, Sindi Farhana

Department of Biology Education Faculty of Science and Technology
State Islamic University Sunan Kalijaga Yogyakarta - Indonesia
Correspondance; *Email: jafarluthfi@yahoo.com

Abstract

Sperm sample from epididimal source can be determined its motility using minimal amount of equipment. These methods will aid researcher and practitioner in sperm motility analysis to determined sperm quality rapidly and practically.

**Keywords**: Sperm quality, Sperm motility, Hemocytometer.

Introduction

Habbatussauda (*Nigella sativa*) belong to the family Ranunculaceae and are widely grown in the Middle East and West Asia. Habbatussauda used as medicinal plant to improve health and treat various diseases including high blood pressure, diabetes, cancer, infection, and infertility. However, previous scientific studies that supporting the traditional use of habbatussauda are still lack. There are only a few scientific studies that show the pharmacological effect of habbatussauda (Najmi et al., 2008; Yar et al., 2008).

Infertility in men is a serious problem (Turner 2003; Clouatre 2005). An estimated 10% of men experienced fertility disorders and 50% of infertile couples are due to male factors (Pei et al. 2005). Infertility can cause serious psychological problems. Family happiness can be disrupted, that will reduce work productivity in an individual or in a family.

Medical treatment for male fertility disorders is still not entirely successful (Hamadeh et al. 2001; Hannan, 2008; Kohn 2001). Existing methods of treatment such as assisted reproductive technology (ART) require high costs, while the percentage of success for getting a child is low (Orgebin-Crist 1998), even causing side effects (Lefie’vre et al. 2007).

Previous study by Tohamy et al. (2010) and Al-Sa’aidi et al. (2009) showed an increase in fertility of male animals treated with habatussauda. This study aims to determine the effect of habbatussauda one of the important factors on male fertility parameter, namely sperm count.

Method

Material

Habatussauda seeds (*Nigella sativa*) obtained from pharmacy distributors in Yogyakarta.

Chemical material

All chemicals used in this study are analytical unless stated otherwise. The material used were NaCl, KCl, KH2PO4, MgSO4.7H2O, NaHCO3, bovine serum albumin, glucose, and methanol obtained from Merck, Germany. CaCl2 obtained from Scharlau, Spain. Penicillin-Streptomycin Glutamine from Life Technology, USA. Sodium pyruvate was obtained from Gibco, USA, while sodium lactate and glycerin were obtained from Sigma, USA. Giemsa dyes are obtained from GCC, UK.

Test organisms

The animals used in this study were mature male Sprague-Dawley rats. 14 mature male rats were obtained from the Experimental Animal Research Unit, Faculty of Veterinary, Gadjah Mada University, Yogyakarta. The rats are given pellets as food and drink water *ad libitum*.

Tool

The tools used in this study are:

- Cage
- Incubator
- Hemocytometer
- Microtome
- Micropipette
- Oven
preparations of testicular histology slices of treated rats, there was an increase in seminiferous tubule diameter and thickness, number of spermatogonia, primary spermatocytes, secondary spermatocytes, spermatids, and free spermatooza.

This is confirmed by the study of El-Tohamy et al. (2010) on "The Beneficial Effects of Nigella sativa, Raphanus sativus, and Eruca sativa Seed Cake to Improve Male Rabbit Fertility, Immunity and Production". This study showed that a mixture of Nigella sativa, Raphanus sativus, and Eruca sativa extracts increased sperm motility and immunity of male rabbits.

Conclusion

From the results of the study it is concluded that the treatment of habatussauda has a positive effect on sperm count.

Acknowledgement

This research was supported by Indonesia Ministry of Religious Affairs through competitive research grant of Institute of Research and community based outreach program (LPPM UIN Sunan Kalijaga). We thank Dr Mahanem (University Kebangsaan Malaysia) for sharing of the development of sperm analysis methodology.

References

Mellisa, 2009. Uji aktivitas antibakteri dan formulasi dalam sediaan kapsul dari ekstrak etanol rimpang tumbuhan temulawak (Curcuma xanthorrhiza, Roxb) terhadap...

