
**EFFECT OF ETHANOLIC EXTRACT OF GINGER (*Zingiber officinale*) ON
SPERMATOGENESIS AFTER LONG TERM CONSUMPTION IN RATS**



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ABSTRACT

Ginger or *Zingiber officinale* is one of the natural plants that been traditionally used in a number of treatments since a very long time ago. Although ginger is being used to cure some illness, but there are a few studies which claim that ginger might induce an adverse effect to the body. In the research on reproductive biology, ginger is said to have negative effects on sperm parameters. Therefore this study was proposed in the aim to determine the effect of ginger extract on sperm cells. This is the first study conducted to determine on the effects of the ginger (*Zingiber officinale*) extract on the acrosome region of the sperm cells. In this study, fifty male Sprague-Dawley (SD) rats were used for sample collection and preparation. The samples were divided into two parts, the first one was used for routine semen analysis and the second part was used for further experimentation. The sample were incubated with four different doses of ginger extract which is 0 μ g/ml, 50 μ g/ml, 100 μ g/ml and 200 μ g/ml with a series of incubation time starting from 0, 15, 30, 45 and 60 minutes. The sperm cells were further stained using P-FITC-BSA and were finally observed for the rate of normal AR occurrence. Data observation indicates that the rates of AR are reduced in the time of incubation period. The AR percentages also show a decrement in every single incubation time for each treatment dose. The reductions in the normal AR rate are probably due to the lesser percentage in the presence of normal sperm cells. This condition might be because of the excessive generation of ROS through a long incubation with ginger extract has causes damages to the sperm cells. The declining rate of normal AR and the increasing rate in the presence of abnormal or damaged cells are indicating the signs of the presence of ROS inside the semen. Result from this study shows that ginger extract might induce toxic effects to the sperm cells, if the semen is being exposed to the ginger for a long duration.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Ginger or *Zingiber officinale* is one of the famous herb medicines that been used universally either as modern medicine or traditional medicine. In modern medicine, it is used to treat nausea and vomiting associated with pregnancy (Densak *et al.*, 1997). Ginger also has the antioxidant effect that might affect the sperm motility and quality including the acrosomal integrity and sperm viability (Khaki *et al.*, 2009).

Sperm acrosomal integrity and viability can be affected by the high concentration of reactive oxygen species (ROS) (Baumber *et al.*, 2000). ROS will increase the apoptosis of the sperm cells, thus decrease the viability of the sperms. ROS will attack the fluidity of the sperm plasma membrane and also the integrity of the DNA in the sperm nucleus (Agarwal *et al.*, 2002). However natural production of oxidant