

Sterility effects of Neem (*Azadirachta indica*) extract on male rat

Mahmoudi Meymand M. (M.S.)¹, Morowati M. (Ph.D.)², Ghazi Khansari M. (Ph.D.)³, Nasrollazadeh B. (Ph.D.)⁴, Minaie B. (Ph.D.)⁵.

1-Instructor, Department of Pharmacology, Faculty of Medicine, Tehran Medical Sciences University, Tehran, Iran.

2-Academic Staff, Department of Pesticide Research, Plant Pests and Diseases Research Institute, Tehran, Iran.

3-Associate Professor, Department of Pharmacology, Faculty of Medicine, Tehran Medical Sciences University, Tehran, Iran.

4-Associate Professor, Department of Embryology, Faculty of Medicine, Tehran Medical Sciences University, Tehran, Iran.

5-Assistant Professor, Department of Anatomy, Faculty of Medicine, Tehran Medical Sciences University, Tehran, Iran.

Abstract

Nowadays uses of synthetic pesticides has caused a lot of environmental problems. For this reason there is an effort to replace them with biopesticides. One of these ways is the use of plant bioproducts. Various studies on *Azadirachta indica* (Neem) have proven that the seed extract of this plant has reversible infertility and spontaneous abortion properties. In this study we are trying to determine the effective dose of its seed extract for sterility of rodent pests. In this survey, 24 male wistar rats with 4-5 months old (weighing about 150-200 grams) were selected randomly. They were divided into 4 subgroups each containing 6 rats. The Neem extract (Neem Azal 1%) was fed to 3 groups by gavage for six days. The first group was fed with water and others were fed with Neem extract (5mg/kg, 15mg/kg and 25mg/kg respectively). Hematological parameters were determined on 4th and 9th day of the experiment. On the 10th day two animals from each group were dissected for histological study of testes. Remaining animals were tested for fertility with fertile female rats. There were no significant differences between control and treated groups. After observing reproduction in female rats, these groups were excluded from study. There were no significant differences between control and treated groups in their hematological parameters except for MCH and hemoglobin on 4th (P<0.001, P<0.01 respectively) and 9th day (p<0.05) and WBC on 9th day (p<0.05) in third group, which showed an increase. There were no significant differences between serum testosterone levels. In group which received 15 mg/kg extract, reproduction occurred after 60 days (reproduction cycle in rats is 20-23 days). In group which received 25mg/kg extract, half of the animals died due to high doses of Neem extract and in the remaining half, reproduction occurred after 3 months. Histological results of testes indicated abnormality in spermatogenesis and sperms production in some of the seminiferous tubules. Therefore after 60-90 days and repair of injured cells, reproduction is observed again. Base on the results of this study it seems that we can use Neem seed extract as an anti-fertility agent, considering its cost benefit ratio and suitable formulation, we can use it as rodent baits to control harmful agricultural rodents. In this way we have a new method of controlling deleterious rodents.

Keywords: Neem (*Azadirachta indica*), , Anti-fertility, Spermatogenesis, Spermatozoa, Rat and Pesticide.

Corresponding address: Mahmoudi Meymand M., Department of Pharmacology, Faculty of Medicine, Tehran Medical Sciences University, Tehran, Iran.

Email: ghazikha@sina.tums.ac.ir