

The effects of ethanolic extracts of *Melia indica* and *Melia azedarach* fruits on reproductive indices of male rats

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Abstract

Introduction: The world population is growing rapidly and most contraceptive methods are female-based with a broad range of side effects. Therefore, the research for effective male contraceptives is gathering pace and strength. One of the topics under study is the inhibitory effects of Neem or *Melia indica* fruit extract on male reproductive activities. This plant is native to India and has been studied for its contraceptive, spermicidal, antifungal and antidiabetes activities. Due to the abundant growth of Neem in the southern parts of Iran and the presence of another similar species named Persian lilac or *Melia azedarach*, in the northern parts of the country, a study was designed to compare attributed pharmacological activities of both plants.

Materials & Methods: The two plant species, *Melia indica* and *Melia azedarach* are from the Meliaceae family, which were collected from Bandar Abbas and Gorgan respectively. After identification of the plants in the herbarium of the faculty of pharmacy, hydralcoholic extracts of the plants were prepared and concentrated by a percolator and a rota-evaporator. The hydralcoholic extracts were injected subcutaneously in 50mg/kg and 150mg/kg doses into 55 to 65-day-old male rats kept in the rat chow of the faculty with water ad libitum, constant light-dark cycles and at 22 °centigrades for 60 days. The control group received normal saline during the same period. Determination of reproductive indices including Sperm Motility, Sperm Viability, Epididymal Sperm Reserve (ESR), Daily Sperm Production (DSP), Gonadosomatic Index (GSI), and fertility were done as an indication of contraceptive activity of the extracts.

Results: Sperm motility showed a significant difference for those receiving *Melia indica* (150mg/kg doses) and *Melia azedarach* (50mg/kg and 150mg/kg doses) respectively compared to that of the controls. Daily sperm production (DSP) showed a significant reduction for those on *Melia azedarach* with 150mg/kg doses in comparison to the control group ($p < 0.05$). The results also demonstrated a significant reduction in fertility rate by *Melia indica* at 150mg/kg ($p < 0.05$) and *Melia azedarach* at 50 and 150mg/kg doses ($p < 0.01$) compared to the controls. Therefore, *Melia indica* and *Melia azedarach* are able to decrease fertility rate indices significantly ($p < 0.05$ and $p < 0.01$ respectively).

Conclusion: These two species of plants, especially *Melia azedarach*, are able to decrease fertility indices. Due to the well-known reputation of Indian neem in Europe and America for its multiple therapeutic effects and the presence of different formulations, these two species are to be studied more extensively and introduced more widely to the world for having male contraceptive potentials.

Key Words: *Melia indica*, *Melia azedarach*, Contraception, Rat, Fruit extract, Reproductive Indices, Male Contraception, Neem, Sperm, Spermatogenesis.

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