

The Effect of different concentrations of knotgrass (*Polygonum avicular*) extract on biological parameters of sperm fertility in rooster

Hemmati, S.¹; Gholami-Ahangaran, M.² and Heidari, B.³

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Abstract

Antioxidants can disrupt the production of free radicals by neutralizing oxidative stress and increase the proliferation of testicular germ cells and then improve the quality and quantity of sperm fertility indices in breeder chickens. The knotgrass extract (*Polygonum avicular*) has high levels of phenolic and flavonoid compounds and has high antioxidant properties. This study aimed to investigate the effect of knotgrass extract on the biological parameters of sperm in rooster. In this study, hydroalcoholic extracts of knotgrass was prepared in four concentrations of zero, 500, 1000 and 2000 mg/L and added to drinking water for adult Golpayegan official breeders for one week. After one week, the effect of different doses of the extract on the biological parameters of sperm (number, mobility, survival and normal sperm morphology) was evaluated and compared. The Papanicolaou staining was also used to evaluate the sperm abnormalities. The most number of live sperm with the highest motility and normal morphology was observed in group receiving 2000 mg/L of knotgrass extract. Also, application of high dosage of extract significantly reduced the head, middle piece and tail abnormalities of sperm ($P \leq 0.05$). The highest number of live sperm with the highest motility and normal morphology was observed in the group receiving 2000 mg/L of knotgrass extract. Also, using high dose of extract significantly reduced head, medulla, and sperm motility abnormalities ($P \leq 0.05$). In overall, the use of hydroalcoholic extracts of knotgrass improved some of the biological parameters of sperm. It can be concluded that knotgrass (*Polygonum avicular*), due to high amount of phenolic and flavonoid antioxidant compounds, improves the sperm quality in fowls.

Key words: Sperm, Fertility, Fowl, Knotgrass, *Polygonum avicular*, Rooster

1- DVM Graduated Faculty of Veterinary Medicine, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran

2- Associate Professor, Department of Clinical Sciences, Veterinary Medicine Faculty, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran

3- Assistance Professor, Department of Clinical Sciences, Faculty of Veterinary Medicine, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran and Reproductive Biotechnology Research Center, ACECR, Tehran, Iran

Corresponding Author: Gholami-Ahangaran, M., E-mail: mgholamia1388@yahoo.com

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