

Edible bird's nest supplementation in chilled and cryopreserved Arabian stallion semen

ABSTRACT

Diluents and various biological products have been used in different animal species, with promising outcomes in post-thaw sperm quality. Nevertheless, only a few reports are available for the semen of Arabian horses. Edible bird's nest (EBN) – a product of the salivary secretions of swiftlet species is widely known to have both antioxidant and anti-inflammatory properties. Presently, there is no data available on the role of EBN supplemented in different extenders and its effect on semen quality in stallion semen. Two in vitro experiments were conducted to examine the effects of edible bird's nest (EBN) on the quality of chilled and post-thawed cryopreserved Arabian stallion spermatozoa. In experiment one, 10 ejaculates were collected, divided into two equal parts, diluted using EquiPlus® and INRA 96® and supplemented with 0 % (control), 0.12 %, 0.24 % EBN concentrations. The semen samples were stored at 5 °C and observed at 0, 24, and 48 h. Sperm kinetics variables (% total motility [TM] and progressive motility [PM], curvilinear velocity; VCL, straightness; VSL, average path velocity; VAP) were analyzed using computerized assisted sperm analysis. For chilled semen, there was no significant difference in any of the sperm quality parameters between control (0 %), 0.12 %, and 0.24 % EBN supplementation either in INRA96® or EquiPlus®. In experiment two, nine ejaculates were diluted and cryopreserved using EquiPlus Freeze® and INRA Freeze® containing 0 %, 2.4 %, and 4.8 % EBN, and evaluated after thawing. Sperm kinetics, DNA integrity and antioxidant capacity - Biological Anti-oxidant Potential (BAP) and Reactive Oxygen Metabolites (d-ROMs) test were evaluated. In chilled semen, there was no significant difference in any of the sperm quality parameters between control (0 %), 0.12 %, and 0.24 % EBN supplementation either in INRA96® or EquiPlus®. For frozen semen supplemented with 2.4 % and 4.8 % EBN had higher sperm motility parameters compared to control in INRA Freeze® and EquiPlus Freeze®, but the values were not statistically significant ($P > 0.05$). Also, EBN supplementation had no significant effects on the DNA integrity, biological antioxidant potential, and reactive oxygen metabolites. EBN supplementation had no significant effects on sperm quality and antioxidant status in chilled and frozen Arabian Stallion semen. Future studies might consider different methods of EBN preparation and concentrations to elucidate the potential biological impact of EBN in Arabian stallion semen.

Keyword: Arabian stallion; Antioxidant; Cryopreserved Semen; Edible Bird's Nest; EquiPlus®; INRA®