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Characteristics and Preservability of Timor Stags (*Cervus timorensis*) Semen in TRIS Extender with Various Sources of Carbohydrates

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Abstract

Semen stored at ambient temperature – where spermatozoal metabolism is almost maximal – needs additives to provide nutrition and buffering capacity for metabolic waste products (lactic acid, CO₂) to prevent permanent damage. The present study investigated the intactness of the plasma membrane (IPM) and the acrosomal cap (IAC) of Timor stag spermatozoa kept at 27-28°C in Tris egg yolk (TEY) extender with different carbohydrate additives (glucose, TEYG; fructose, TEYF; and sucrose, TEYS).

Five deer stags aged three to five years in hard antler stage with symmetrical testicles were used. Semen was collected by electro-ejaculation after sedation with a combination of 1 mg xylazine and 2 mg ketamin i.m. kg⁻¹ body weight. Raw semen was evaluated every 3 hours for the percentage of motile spermatozoa, live spermatozoa and IPM using the hypo-osmotic test, and for IAC using triphan blue. Data were analysed and means were compared by the least significant difference test.

The fresh semen had an average volume of 2.06 ml, pH 7.03, with yellow white to creamy colour and normal to thick consistency. The percentage of motile spermatozoa was 75.83%. The spermatozoal concentration was 842.35 × 10⁶ ml⁻¹. The percentage of live spermatozoa was 87.67%, with a spermatozoa abnormality of 7.31%. IPM was 76.83%, and IAC was 80.17%. After 24 hours of preservation, percentage of IPM in TEYF (4%) was significantly lower than in TEYG (21.67%) and in TEYS (28.83%). The percentage of IAC in TEYS (25.33%) and TEYG (22.67%) was significantly higher ($p < 0.05$) than in TEYF (4%). The rapid decline in fertility of spermatozoa stored at ambient temperature is probably due to extracellular oxidative stress, effects of seminal plasma and endogenous free radical production. We conclude that deer liquid semen preserved at 27-28°C in TEYS has better IAC and IMP than semen preserved in TEYG or TEYF.

Keywords: Deer, glucose, fructose, semen, stags, sucrose