EFFECT OF EXTENDERS ON SEMINAL CHARACTERISTICS AND ARTIFICIAL INSEMINATION IN GERMAN SHEPHERD DOGS

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Received 25-6-2011 Accepted 30-1-2012

ABSTRACT

The aim of present study was to evaluate the seminal characteristics of German Shepherd dog semen in two dilutors i.e. sodium citrate egg yolk (EYC) and coconut milk extender (CME). Samples were preserved at 5^0C in sodium citrate egg yolk (EYC) and at room temperature in coconut milk extender (CME) upto 72 hrs. The average morphological abnormalities recorded in EYC were 4.54±0.10, 8.18±0.03, 12±0.15 and 14.96±0.26% and in CME dilutor were 6.98±0.25, 11.35±0.33, 14.87±0.35 and 18.56±0.38% at 0,24,48, and 72 hrs, respectively. Analysis of variance revealed that there was a significant (P<0.05) difference between hours within dilutor and between dilutors at different temperatures. The study revealed that preservability of semen was better upto 72 hrs at 5^0C in EYC dilutor.

KEY WORDS: Semen preservation, German Shepherd dog, Seminal characteristics

INTRODUCTION

Dogs spermatozoa are filiform structure and highly vulnerable to mechanical damage. The structural integrity and motility of spermatozoa is profoundly influenced by external factors like preservatives, surfactants, temperature and results in loss of motility on dilution. The preservation of selected gene pools can help to improve individual breeds and to eliminate problems that could develop within a breed. The efficacy of semen dilutors and the addition of various preservatives during preservation depend on their quality to maintain the normal functional structure of spermatozoa. Semen dilutors protect the sperm membrane from temperature variations as well as from mechanical trauma during transport, providing stable pH and temperature conditions.

MATERIALS AND METHODS

Semen samples were collected from eight apparently healthy male German Shepherd dogs (2 to 5 years of age) . Before collection, the perineal region was washed well with antiseptic solution and followed by water. The semen samples were divided into two parts ; one part was stored at 30°C and was utilized for macroscopic and microscopic examination and the other part was used for dilution. The semen sample was cooled gradually and stored at 5°C in the refrigerator after dilution in EYC and the semen diluted in CME diluter was stored at room temperature. The individual motility, live percentage and morphological abnormalities were recorded in preserved semen at 0, 24, 48 and 72 hrs interval for each dilutor

RESULTS AND DISCUSSION

The characteristics of undiluted semen were in accordance with the findings of Daniwanya *et al.* (1995) and Kawakami *et al.* (2005). The average individual motility of semen preserved at 0, 24, 48 and 72 hours, was recorded as 86.32 ± 0.57, 73.04 ± 0.27, 62.65 ± 0.43 and 55.4 ± 0.53%, respectively in EYC dilutor and 85.39 ± 0.60, 59.14 ± 0.67, 46.87 ± 0.26 and 35.54 ± 0.38%, respectively in CME dilutor. The differences due to diluents and different hours of preservation was found to be highly significant (P<0-05). Progressive motility of spermatozoa was maintained better

in EYC diluent than CME dilutor during different hours of preservation at refrigeration temperature (5^0C).The present findings are similar with the recommendation given by Bendorf and Chung (1958) and Kober (1986) for longest motility of spermatozoa in EYC dilutor. The average live sperm count of semen preserved at 0, 24, 48 and 72 hours, was recorded as 88.98 ± 0.14, 73.35 ± 0.36, 63.15 ± 0.43 and 55.59 ± 0.49%, respectively in EYC dilutor and 87.10 ± 0.15, 59.87 ± 0.62, 48.15 ± 0.22 and 36.18 ± 0.47%, respectively in CME dilutor. It was observed that the percentage of live sperm decreased significantly ($P<0.05$) as storage time increased in both EYC and CME dilutors. Gutierrez (1957) also recommended EYC dilutor for long survival of spermatozoa.

The average morphological abnormalities of semen preserved at 0, 24, 48 and 72 hours was recorded as 4.54 ± 0.10, 8.18 ± 0.03, 12 ± 0.15 and 14.96 ± 0.26%, respectively in EYC dilutor and 6.98 ± 0.25, 11.35 ± 0.33, 14.87 ± 0.35 and 18.56 ± 0.38%, respectively in CME dilutor. The morphological abnormalities of spermatozoa in two dilutors varied significantly ($P<0.05$). The morphological abnormalities in spermatozoa was less in EYC than CME dilutor during 24, 48 and 72 hrs of preservation at 5^0C. Gutierrez (1957) also found low morphological abnormalities in EYC dilutor.

A.I. was performed with diluted semen in EYC and CME with 100 million sperm concentration per insemination in 6 bitches each . Three bitches (50 %) conceived with EYC diluted semen while, two bitches (33.33 %)conceived with CME diluted semen. Nishiyama *et al.* (1999) reported 33-89 % conception rate in bitches using Egg yolk tris citrate acid buffer which is agreement with the present findings.

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