EFFECT OF MINERAL SUPPLIMENTATION ON SEMINAL PLASMA OF ASSAM LOCAL GOAT

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ABSTRACT

Eight to ten months old, 10 healthy male Assam local goat have been selected. Two groups (Gr-I and Gr-II) were made, five in each keeping approximately equal average body weight in each group. The animals were let loose in the morning for grazing and in the evening restricted amount of two different types of concentrate were offered to each group, individually as per the body weight. The ration for the Gr-I was incorporated with mineral mixture at 2% level and no mineral mixture was added in the ration of Gr-II. This feeding practice was continued till the end of the experiment. When the animals attained the age of 12 months and above, semen was collected from each buck, twice weekly, for a period of 4 weeks for analysis of different macro and microminerals. The apparently higher concentration of Ca, P and Mg and significantly (P<0.05) higher concentration of Fe, Cu and Zn was recorded in Gr-I.

Mineral concentration in the seminal plasma provide the congenial milieu for the survival of sperms (Suther et al., 2000). The knowledge of mineral concentration is required for preparation of suitable preservation technique and semen extenders (Suresh Kumar et al., 1999). The concentration of different elements in seminal plasma also reflect the quality of semen and physiological status of reproductive accessory gland (Mishra et al., 1989 and Gokhele et al., 2003). The present experiment is designed to elucidate the affect of mineral supplementation on concentration of different macro and microminerals in the seminal plasma of Assam local goat.

Ten healthy, male Assam local goats of 8-10 months old have been selected from the experimental animal shed of Department of Animal Physiology, College of Veterinary Science, Khanapara. Two groups (Gr-I and Gr-II) were made with equal numbers and approximately equal average body weight. The animals were let loose in the morning and in the evening two different types of concentrate were given to each group of animal individually as per the body weight. The ration of the Gr-I was incorporated with mineral mixture at 2% level and no mineral mixture was added in the ration of the Gr-II. The DCP and TDN of the concentrate were as per Ranjhan (1993). This feeding practice was continued till the end of the experiment. When the animal attained the age of 12 months and above, semen was collected from each buck, twice weekly for a period of 4 weeks by artificial vagina. The semen samples were centrifuged for separation of seminal plasma. Seminal plasma were processed (Fick et al., 1979) and different elements viz., Ca, Mg, Fe, Cu and Zn were estimated in Atomic Absorption Spectrophotometer (AAS). The inorganic phosphorus was estimated as per Taussky and Shorr (1953). The data generated from the study were compared by 't' test (Snedecor and Cochran, 1968).

The concentration of different elements in seminal plasma is presented in Table 1. The average concentration of Ca, P and Mg in Gr-I was 8.94±0.15, 8.40±0.14 and 5.05±0.23 and for Gr-II was 8.69±0.15, 8.14±0.20 and 4.97±0.14 respectively. The concentration of macrominerals between the two groups did not vary significantly. The average macromineral profile for both the groups were within the range and it is in consonance with the result of Suresh Kumar.
Table 1. Concentration (Mean±S.E.) of different elements in seminal plasma of Assam local goat

<table>
<thead>
<tr>
<th>Group</th>
<th>Ca</th>
<th>P</th>
<th>Mg</th>
<th>Fe</th>
<th>Cu</th>
<th>Zn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gr-I</td>
<td>8.94±0.15\textsuperscript{a}</td>
<td>8.40±0.14\textsuperscript{a}</td>
<td>5.05±0.23\textsuperscript{a}</td>
<td>0.92±0.04\textsuperscript{a}</td>
<td>0.11±0.02\textsuperscript{a}</td>
<td>0.89±0.05\textsuperscript{a}</td>
</tr>
<tr>
<td>Gr-II</td>
<td>8.69±0.15\textsuperscript{a}</td>
<td>8.14±0.20\textsuperscript{a}</td>
<td>4.97±0.14\textsuperscript{a}</td>
<td>0.58±0.06\textsuperscript{b}</td>
<td>0.06±0.01\textsuperscript{b}</td>
<td>0.57±0.06\textsuperscript{b}</td>
</tr>
</tbody>
</table>

Mean bearing different superscript in the same column is significant (P<0.05).

et al. (1999) who studied the seasonal variation of seminal plasma in rams. However much lower content of Ca and Mg were recorded by Daudu et al. (1984) in rams. These might be due to the difference of feeding regime and geo-climatic condition. The concentration of all three (Fe, Cu and Zn) microminerals in Gr-II was significantly (P<0.05) low and the mean values of each attribute in both the groups are comparable with the earlier report of Suther et al. (2000). Positive correlation of Fe and Cu concentration were discernible with the concentration of spermatozoa (Mishra et al., 1989 and Zaghoul et al., 1991) and Zn with sperm motility (Kaludin et al., 1983). Thus it can be concluded that mineral supplementation at 2% level provide a congenial milieu for the survival of spermatozoa as well as may increase sperm concentration and motility in Assam local goat.

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