**EFFECTS OF ANTIOXIDANTS DURING PRESERVATION OF JAMUNAPARI BUCK SEMEN**

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**Chattogram-4225, Bangladesh**

**September, 2022**

Authorization

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**September, 2022**

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**This is to certify that we have examined the above Master’s thesis and have found that it is complete and satisfactory in all respects, and all revisions required by the thesis examination committee have been made**

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Dedicated to

Allah

&

My Beloved Parents

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**List of abbreviations**

|  |  |  |
| --- | --- | --- |
| TCEYg | - | Tris citrate egg yolk(Glycerol) |
| TCEYw | - | Tris citrate egg yolk(water) |
| mM | - | Mili mole |
| Mg | - | Milligram |
| µl | - | Microliter |
| BBG | - | Black Bengal Goat |
| GH | - | Glutathione |
| Ml | - | Milliliter |
| WHO | - | World Health Organization |
| CASA | - | Computer Aided Sperm Analysis |
| DNA | - | De-oxy ribonucleic Acid |
| µm | - | Micrometer |
| *et al*. | - | And his associates |
| % | - | Percentage |
| ˚F | - | Degree Fahrenheit |
| ˚C | - | Degree Celsius |
| CVASU | - | Chattogram Veterinary and Animal Sciences University |
| FAO | - | Food And Agriculture Organization |
| GDP | - | Gross Domestic Product |
| ANOVA | - | Analysis of variance |
| AI | - | Artificial insemination |
| Cm | - | Centimeter |
| HOST | - | Hypo-osmotic swelling test |
| Liq. N2 | - | Liquid nitrogen |
| Vit-C | - | Vitamin C (L-ascorbic acid); |

**Abstracts**

The aim of the study was to compare the fresh semen quality between Black Bengal and Jamunapari buck. And also know the effects of antioxidants in preserved buck semen and selection of antioxidant for preservation with maintaining better quality of Jumunapari buck semen. Fresh semen was collected for comparative evaluation of semen quality between Black Benglal and Jamunapari buck. Jamunapari buck semen was evaluated microscopically and macroscopically then preserved both in chill and frozen method. Three types of semen diluents were used to as semen extender. i. TCEY-1: Tris citrate egg yolk (TCEY) 5% based semen diluent, treated as control ii. TCEY-2: TCEY-1 added with three different concentration of glutathione (3, 5 and 7 mM) and iii. TCEY-3: TCEY-1 added with three different concentrations of Ascorbic acid; Vit C (3, 5 and 7 mg/ml). Volume, PH, color, density, concentration, mass motility, motility, and HOS test were evaluated. The volume (P˂0.05) and mass motility score of Jamunapari buck semen was statistically higher (1.05± 0.38, 4.73 ± 0.45) than Black Bengal (0.51±.12, 4.41 ± 0.33). The Black Bengal buck semen density (4.37 ± 0.22) was significantly (P˂0.05) higher than Jamunapari buck semen (4.13 ± 0.30). Other semen parameters studied in fresh semen were not significantly different. Both in chilled and frozen semen, the effects of TCEY-2 and TCEY-3 was significantly positive to maintain higher percentages of sperm motility, viability and functional integrity in compared with TCEY-1 (P˂0.05). Among three different concentrations of glutathione and Ascorbic acid; 5mM glutathione and 7 mg Ascorbic acid showed better results to maintain the semen quality in relation to motility, viability, membrane integrity and morphology both in chilled and frozen semen throughout the preservation time (5, 10 and 20 days). Among three different semen diluents, TCEY-2 (glutathione added) diluent was best in comparison with control (TCEY-1) followed by TCEY-3 (Ascorbic acid added) diluent. The results concluded that Jamunapari buck semen is better than Black Bengal in relation to its volume and mass motility. Supplementation of antioxidants in semen diluent may maintain better quality of Jamunapari buck semen after preservation. So, 5mM glutathione or 7 mg Ascorbic acid supplemented semen diluent may use to preserve the Jamunapari buck semen.

**Key words:** Antioxidants, Glutathione, Ascorbic acid, Cryopreservation, Jumunapari.