Semen collection in the Sumatran rhinoceros *(dicerorhinus sumatrensis***, Fischer 1814) for breeding attempt to sustain** biodiversity

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Abstract

Sumatran rhino is the most endangered rhino species. Population is less than 300 individuals estimated to remain in the wild with highly declining rate to 50% in the last 15 years. Assisted reproduction technology such as semen collection and cryopreservation or artificial insemination are new methods in conservation of rhinoceros. The objectives of this study was a) to determine the male reproductive status, b) to establish a reliable semen collection methods and c) to assess semen parameters of the fresh collected sample. Three methods for semen collection were compared to determine one male rhinoceros fertilizing potential: a) stimulated combination of artificial vagina (AV), penile massage (PM) and accessory gland massage (AGM), b) AV and PM, c) only with PM. AV combined with PM and AGM gave the best semen collection result with an ejaculation success of 85.71% (6/7, n=7). The combination of AV with PM and PM only obtained an ejaculation success rate of 40% (2/5, n=5) and 33.33% (1/3, n=3), respectively. Full penis erection can be induced in 80% (8/10, n=10) of the collection when stimulated in the morning. Stimulation in the afternoon resulted in only 60% (3/5, n=5) of collection in a full erection. However regardless of the daytime, the ejaculation success rate was equivalent, 60% (6/10, n=10) in the morning and 60% (3/5, n=5) in the afternoon. The collected ejaculates has a volume of 1-12.4 ml, colored purify turbid to
cream turbid and pH 6.90 - 6.99. Semi quantity concentration was 0.05 - 0.1 x 10 sperm/ml. Motility was very weak with forward slow motion scored from 0 to 1. 80% of spermatozoa were immature (prox. cytoplasmic droplet) with head (macro-, microcephalic) and tail (broken tail) abnormalities. Semen quality increased after semen collection been
conducted tor several times, sperm concentration increased to approximately 0.2 - 0.25 x 10 sperm/ml and the amount of immature sperm decreased to 5%. In conclusion, the combination of AV, PM, and AGM showed better results for semen collection compared to other collection methods. Repeated semen collection increased semen quality, although the male has low fertilizing capacity due to low sperm concentration (oligozoospermia) and small volume of ejaculate (oligospermia).

Key words: Sumatran rhino, semen collection, semen quality, oligozoospermia, oligospermia