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Characterizing the reproductive physiology of the male southern black howler monkey, Alouatta caraya

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Limited reproductive data are available for any species of howler monkey, including those listed as threatened (Alouatta pigra) and endangered (A. palliata) by the Convention on International Trade in Endangered Species Status (CITES) report. The Southern black howler monkey (A. caraya) is being considered as a model species to develop assisted reproductive technology (ART) for vulnerable howler species. Specific objectives of this study were to evaluate the effect of 1) time of year on ejaculate quality and testosterone concentration, 2) age of male on ejaculate quality, and 3) seminal plasma on sperm longevity in vitro. Three adult (4.5 to 5 years) and 3 subadult (1.5 to 2.5 years) males were evaluated for a 1.5-year period. Semen samples were obtained by electroejaculation, and testosterone levels were monitored by fecal steroid metabolite radioimmunoassay. Males produced coagulum-free ejaculates throughout the year. Likewise, most (4/6) males exhibited constant testosterone levels (3.66 +/- 0.45 ng/g) during the year. Testosterone levels for the remaining 2 males, housed as a bachelor troop, were elevated (43 ng/g) during the months of May and June. Seminal characteristics were similar (P > .05) between age groups. Average semen volume was higher during the summer months (P < .05). Sperm concentrations were highly variable through the year and ranged from 7.0 x 10(6) sperm/mL to 583.0 x 10(6) sperm/mL. Percentages of motile sperm (73% +/- 2.3%) and forward progressive sperm motility (3.3 +/- 0.1), however, were consistent (P > .05) throughout the year. The average pH (8.9 +/- 0.1) and osmolality (356.7 +/- 26.1 mmol/kg) of raw semen also did not vary (P > .05) throughout the year. Ejaculates from subadult males, however, contained more (P < .05) morphologically abnormal spermatozoa than adult ejaculates. In addition, in vitro sperm longevity was poor (<2 hours) for subadult male samples, regardless of the presence or absence of seminal plasma (P > .05). For adult males, seminal plasma was detrimental to sperm longevity; however, spermatozoa survived more than 5 hours in vitro when seminal plasma was removed. Although subadult males produce semen, these ejaculates would not be ideal for further characterization of seminal traits or development of ART for other howler monkey species.