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Impact of herbal supplementation *in-vivo* on oxidative stress markers and semen quality in sub-fertile buffalo (*Bubalus bubalis*) bulls

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Study was conducted to assess the combined effects of herbs on semen quality and oxidative stress markers in sub-fertile buffalo bulls (*Bubalus bubalis*). A total of 144 semen ejaculates (16 ejaculates/bull) were collected from 3 sub-fertile buffalo bulls maintained at bull station, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, India (Latitude/Longitude, 30.55°N, 75.54°E) following oral supplementation of *Panax* ginseng roots, shilajit, *Withania somnifera* roots, *Tribulus terrestris* fruits, *Turnera diffusa* leaves, *Ptychopetalum olacoides* bark each @400 mg/100 kg body weight and *Pausinystalia yohimbe* bark @300 mg/100 kg body weight of bulls for 60 days. Semen was evaluated for quality and oxidative stress markers (lipid peroxidation, superoxide dismutase and glutathione peroxidase) during pre-supplementation, supplementation and post-supplementation phases (each phase of 60 days). Data were analyzed by general linear univariate-model with bull as random factor using SPSS software. Herbal supplementation significantly ($P<0.05$) improved mass motility, individual motility, rapid progressive motility, curvilinear velocity, sperm concentration, viability and active mitochondria. Total sperm abnormalities and amplitude of lateral head displacement were significantly ($P<0.05$) reduced during supplementation and post-supplementation phases. The level of malondialdehyde was significantly ($P<0.05$) declined during supplementation and post-supplementation phases. The activity of superoxide dismutase significantly ($P<0.05$) increased during supplementation and post-supplementation phases, whereas the activity of glutathione peroxidase was significantly ($P<0.05$) increased only during the supplementation phase. It could be concluded that feeding of herbs in combination improved the semen quality and antioxidants activity in sub-fertile buffalo bulls.

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