Comparison of intramuscular vehicles, with or without progesterone, on serum progesterone concentrations in noncycling mares

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Progesterone (P_4) supplementation, daily or weekly, is common in clinical broodmare practice. The objective was to evaluate serum concentrations of progesterone following a single intramuscular injection of 3 vehicles (BioRelease, BET labs, Lexington, KY; and cotton seed and sesame seed oils, Rood and Riddle Veterinary Pharmacy, Lexington, KY), with or without P_4. Anestrus light horse mares (n = 48) were used; they had no luteal tissue, ovarian follicles d 20 mm and serum P_4 concentrations < 0.5 ng/ml over a 2 week interval. Mares were randomly allocated into 6 treatment groups: 1500 mg P_4 in 10 ml BioRelease (BR + P_4; n = 12); 1500 mg P_4 in 10 ml sesame seed oil (SSO + P_4; n = 12); 1500 mg P_4 in 15 ml cotton seed oil (CSO + P4; n = 11); 10 ml BioRelease without P_4 (BR only; n = 5); 10 ml sesame seed oil without P_4 (SSO only; n = 4); and 15 ml cotton seed oil without P_4 (CSO only; n = 4). Day 0 was designated as the day on which mares were given P_4. Mares were monitored by transrectal ultrasonography every 3 days and serum collected on days 1 - 14, 17, and 20. Serum P_4 concentrations were determined using the clinical enzyme immunoassay analyzer, TOSOH A1A 900. One-way ANOVA was used to compare differences in mean P_4 concentrations among treatment groups, with significance set at $p < 0.05$. Serum P_4 concentrations were higher ($p < 0.003$) by Day 7 in the BR + P_4 group compared to all other groups (Table). By Day 14 no difference ($p = 0.127$) in serum P_4 was detected among treatment groups. Serum P_4 concentrations were > 1.0 ng/ml in non-cycling mares for at least 7 days after a single intramuscular injection of 1500 mg P_4 when delivered in BioRelease, sesame seed oil or cotton seed oil.

Table. Mean $\underline{+}$ SEM serum P_4 concentrations (ng/ml) in mares given three vehicles, with or without P_4.

Group	Day 0	Day 1	Day 4	Day 7	Day 10	Day 14	Day 21
BR + P_4	0.13 ± 0.04^{a}	16.33 ± 1.99^{a}	8.04 ± 0.54^{a}	8.10 ± 1.06^{a}	2.73 ± 0.60^{a}	0.71 ± 0.28^{a}	0.15 ± 0.04^{a}
SSO + P_4	0.10 ± 0.06^{a}	$23.73\pm2.99^{a,b}$	7.00 ± 1.09^{a}	2.79 ± 0.52^{b}	1.02 ± 0.22^{b}	0.29 ± 0.07^{a}	0.08 ± 0.03^{a}
CSSO +P_4	0.07 ± 0.02^{a}	23.63 ± 2.04^{b}	6.7 ± 0.93^{a}	3.33 ± 0.84^{b}	1.20 ± 0.27^{b}	0.38 ± 0.13^{a}	0.05 ± 0.02^{a}
BR only	0.06 ± 0.04^{a}	0.04 ± 0.02^{c}	0.04 ± 0.02^{b}	0.06 ± 0.04^{c}	0.02 ± 0.02^{c}	0.06 ± 0.04^{a}	0.06 ± 0.04^{a}
SSO only	0.00 ± 0.00^{a}	0.00 ± 0.00^{c}	0.00 ± 0.00^{b}	0.03 ± 0.03^{c}	$0.20\pm0.20^{b,c}$	$0.0\pm0.0.0^{a}$	0.00 ± 0.00^{a}
CSO only	0.03 ± 0.03^{a}	0.00 ± 0.00^{c}	0.03 ± 0.03^{b}	0.03 ± 0.03^{c}	0.00 ± 0.00^{c}	0.05 ± 0.03^{a}	0.05 ± 0.05^{a}

$^{a\text{-}c}$Within a column, means without a common superscript differed ($p < 0.05$).

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