

# Steroids methylprednisolone and triamcinolone do not impact anti-inflammatory IL-1ra concentrations in Autologous Protein Solution

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## Purpose

Autologous Protein Solution (APS) is prepared at the point-of-care from whole blood and contains high concentrations of white blood cells, platelets, and anti-inflammatory cytokines. APS has been shown to improve equine lameness and range of motion when administered via intra-articular (IA) injection for the treatment of osteoarthritis (OA).<sup>1</sup> The immunosuppressive steroids methylprednisolone and triamcinolone are frequently administered via IA to horses and humans as supplementary treatment for the inflammation associated with OA.<sup>2</sup> It was previously unknown whether concurrent or successive treatment with one of these steroids and APS would impact the cytokine output of the APS treatment.

## Materials & Methods

APS was generated from the blood of six equine donors using the Pro-Stride Kit (Owl Manor Veterinary, Warsaw, IN) and was divided into three equal volumes, one of which served as a non-steroid control. The two remaining APS samples were incubated for two hours with one third of a 40 mg clinical dose of Depo-Medrol Methylprednisolone Acetate (Zoetis, Inc., Kalamazoo, MI) or one third of a 6 mg clinical dose of Kenalog-10 Triamcinolone Acetonide (Bristol-Myers Squibb Company). Cytokine concentrations were determined by ELISA analysis (R&D Systems, Minneapolis, MN). Analysis of variance (ANOVA) was used to evaluate statistical significance.

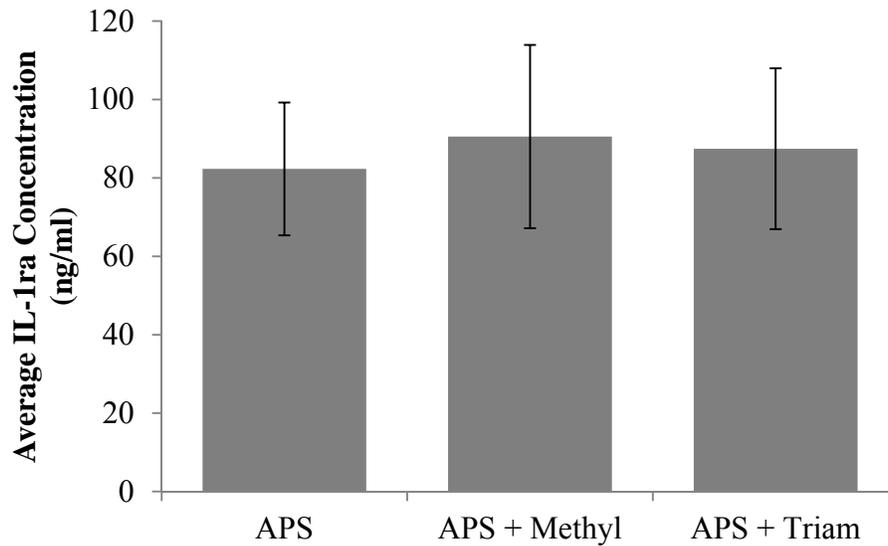
## Results

IL-1ra concentrations were not significantly altered by incubation with steroid ( $p = 0.783$ ) (**Figure 1**). IL-1 $\beta$  concentrations for all conditions were below the detectable limit of the assay (125 pg/ml), indicating that incubation of APS with steroid did not produce an output with high concentrations of IL-1 $\beta$ .

## Conclusion

The combination of steroids with APS did not reduce the concentrations of IL-1ra. This finding suggests that concurrent or successive treatment of OA with methylprednisolone or

triamcinolone and APS does not impact the cytokine content in APS. A future study evaluating the clinical effects of APS and steroids could determine an effective administration protocol for these OA treatments.



**Figure 1.** Average IL-1ra concentrations (ng/ml) in APS, APS incubated with methylprednisolone (Methyl), and APS incubated with triamcinolone (Triam). Data are presented as averages  $\pm$  standard deviation. (n=6)

### Reference List

1. Bertone AL, Ishihara A, Zekas LJ, et al. 2014. Evaluation of a single intra-articular injection of autologous protein solution for treatment of osteoarthritis in horses. *Am J Vet Res* 75: 141-151.
2. National Institutes of Health. 2015. Corticosteroids. United States National Library of Medicine. <http://livertox.nih.gov/Corticosteroids.htm>

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