

DETERMINATION OF WHOLE BLOOD LEVELS OF CYCLOOXYGENASE-1 AND -2 ISOENZYME ACTIVITY IN ALPACA (*Vicugna pacos*)

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ABSTRACT

This study determined concentrations of thromboxane B₂ (TxB₂) and prostaglandin E₂ (PGE₂) and metabolites (PGEM) in alpacas utilising commercially available assays. Twenty healthy adult alpaca (11 castrated males and 9 females) participated in this study. Four ELISAs were utilised: two to quantitate TxB₂ in serum as an indicator of *in vitro* cyclooxygenase-1 (COX-1) activity, one quantitated PGE₂ and a fourth assay quantitated prostaglandin E₂ and metabolites (PGEM) in plasma as indicators of *in vitro* cyclooxygenase-2 (COX-2) isoenzyme activity after leukocyte exposure to lipopolysaccharide. Known standards were utilised for confirmation of assay results. Alpaca serum TxB₂ concentrations were substantially lower than reported in other species and those quantitated in four clinically normal horses using identical methods (alpaca=616±294, 95% CI [47, 753] pg/ml; horse=6087± 855, 95% CI [3964, 8210] pg/ml). Alpaca plasma mean PGEM concentration was 50±28, 95% CI [21, 111] pg/ml. Whole blood determination of TxB₂ and PGE₂ have been utilised in multiple species to evaluate COX isoenzymes for evaluating nonsteroidal anti-inflammatory drug (NSAID) COX inhibition. This study demonstrates that TxB₂ as measured using these methods may not be an acceptable method for determination of COX-1 response to NSAIDs in alpaca. The low whole blood TxB₂ levels identified by these assays may also indicate an intrinsic sensitivity to these drugs that warrants further investigation.

Key words: Alpaca, COX-1, COX-2, cyclooxygenase, prostaglandin E₂, thromboxane