

## **Effects of Collection, Transportation and BCOP Methodology on bovine corneal Histology Evaluation**

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The bovine corneal opacity and permeability (BCOP) assay (Gautheron, 1992 & Sina, 1995), is used as an *in vitro* eye irritation screen for industrial hygiene, product development, and safety testing by measuring changes in corneal opacity, and permeability to fluorescein after chemical exposure. Histopathology has been used in BCOP studies to detect potential corneal injury, where the mode of chemical action might not induce opacity and permeability changes (Curren and Evans 2000). Artifactual changes in the cornea associated with the collection, transportation, or BCOP methodology of the enucleated eyes have not been evaluated; therefore, corneas were excised and fixed in 10% buffered formalin at various steps in the assay process, paraffin embedded, H&E stained and evaluated using light microscopy. Stromal thickness and Descemet's Membrane (DM) thickness was measured along the entire length of the cornea. The epithelium, endothelium, and stroma were similar histologically among all groups. The normalized stromal thickness of the whole globe corneas ( $903.8 \mu\text{m} \pm 122.9 \mu\text{m}$ ), immediately after enucleation ( $876.7 \mu\text{m} \pm 84.2 \mu\text{m}$ ), after the refrigerated transport ( $829.8 \mu\text{m} \pm 63.4 \mu\text{m}$ ), and at the end of the BCOP assay ( $721.2 \mu\text{m} \pm 17.2 \mu\text{m}$ ) suggest corneas undergo minimal artifactual changes as a result of refrigerated transport and the BCOP assay procedures.