Evaluation report on in *vitro* ocular toxicity test methods for identifying ocular corrosive and severe irritants: Bovine Corneal Opacity and Permeability Test Method

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Summary

The Bovine Corneal Opacity and Permeability (BCOP) test method is a technique for testing ocular irritation in an isolated bovine cornea and was developed as an alternative to the Draize test, which is performed on live rabbits.

The lnteragency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) has issued background review documentation (BRD) regarding the use of BCOP in screening substances for corrosion and severe irritant potency, and a JaCVAM peer review panel on alternatives to ocular irritation testing also conducted its own review of this information.

The BCOP test involves the exposure of an isolated bovine cornea to a test substance, followed by an examination of opacity and permeability to assess physiological changes. A determination of ocular corrosion and severe irritant potency is then based on the assessed changes.

These validation tests were performed on a sufficient number of a wide range of test substances, and according to background review documentation, BCOP results show an 81% agreement with corrosion and severe irritant potency of ocular irritants per GHS classification as well as an 84% sensitivity and an 80% specificity. The false-positive rate was 20% and the false-negative rate was 16%. Excluding test substances such as alcohol, ketones, or solids, which are known to have a high false-positive or false-negative rate, yields an overall agreement of 92%, a false-positive rate of 12%, and a false-negative rate of 0%, indicating sufficient precision for the detection of corrosion and severe irritant potency. Favorable results for intra- and inter-laboratory changes have been obtained at what we consider to be a sufficient level.

Based on the above and with due consideration to the limitations of this test method with regard to problematic test substances (alcohol, ketones, solids), we have determined that there are no issues related to the use of BCOP testing as a means of screening chemical substances for ocular irritation potency in the assessment of corrosion and severe irritant potency. It is our opinion that BCOP testing is acceptable for regulatory use in Japan as a means of assessing the corrosion and severe irritant potency of chemical substances.

***Keywords**: Bovine Corneal Opacity and Permeability, BCOP, eye irritation, alternative*