ICCVAM Recommendations for the Routine Use of Topical Anesthetics, Systemic Analgesics, and Humane Endpoints to Refine Ocular Toxicity Testing

J Merrill, M West, D Lovett, T McMahon, J Chen, M Hashem, M Levis, W Stites

1 U.S. Food and Drug Administration (FDA), Silver Spring, MD; 2 U.S. Consumer Product Safety Commission, Bethesda, MD; 3 U.S. Environmental Protection Agency (EPA), Washington, DC; 4 National Toxicology Program Interagency Center for the Evaluation of Alternative Toxicological Methods, Research Triangle Park, NC.

Abstract

The ocular safety assessment is a critical component of the preclinical testing of new compounds, with a primary focus on characterizing ocular irritation and eye damage potential. To refine this testing, an ICCVAM Workshop was convened to develop recommendations for the routine use of topical anesthetics and systemic analgesics, as well as the use of humane endpoints. The Workshop aimed to mitigate pain and distress associated with ocular safety assessments and to provide a balanced preemptive pain management plan. The recommendations were intended to support the development of regulatory guidance and to help refine ocular toxicity testing.

Introduction

The Workshop was organized by the National Toxicology Program Interagency Center for the Evaluation of Alternative Toxicological Methods (OECD Test Guidelines Program) and convened in 2021. The Workshop aimed to refine ocular toxicity testing by promoting the routine use of topical anesthetics and systemic analgesics and by recommending the use of humane endpoints to minimize pain and distress during testing.

ICCVAM Recommendations for the Routine Use of Topical Anesthetics

- Topical anesthetics should be used pre-treatment to reduce pain and distress associated with ocular safety assessments.
- Topical anesthetics should be used with systemic analgesics to provide a comprehensive pain management plan.

ICCVAM Recommendations for the Routine Use of Systemic Analgesics

- Systemic analgesics should be used to prevent and minimize pain and distress during testing.
- Analgesics should be administered based on the severity of injury and the anticipated level of pain.

ICCVAM Recommendations for the Routine Use of Humane Endpoints

- Humane endpoints should be used to terminate tests when pain or distress is excessive or intolerable.
- Humane endpoints should be used to evaluate the efficacy of pain management strategies.

ICCVAM Recommendations on Routine Pretreatment with Topical Anesthetics

- Topical anesthetics should be used pre-treatment to reduce pain and distress associated with ocular safety assessments.
- Topical anesthetics should be used with systemic analgesics to provide a comprehensive pain management plan.

ICCVAM Recommendations on Changes to Ocular Safety Testing Protocols

- Changes to testing protocols should be based on a thorough evaluation of the potential for pain and distress.
- Changes should be made to minimize the duration of testing and to use humane endpoints.

ICCVAM Recommendations on Revised Ocular Safety Testing Protocol

- Ocular safety testing should be revised to incorporate the use of topical anesthetics and systemic analgesics.
- Revised protocols should include humane endpoints to minimize pain and distress.

ICCVAM Recommendations on Revised Ocular Safety Testing Protocol

- Ocular safety testing should be revised to incorporate the use of topical anesthetics and systemic analgesics.
- Revised protocols should include humane endpoints to minimize pain and distress.

Recommendations

- Topical anesthetics should be used pre-treatment to reduce pain and distress associated with ocular safety assessments.
- Topical anesthetics should be used with systemic analgesics to provide a comprehensive pain management plan.

References


Acknowledgments

The ICCVAM Recommendations for the Routine Use of Topical Anesthetics, Systemic Analgesics, and Humane Endpoints to Refine Ocular Toxicity Testing were developed in collaboration with the following organizations:

- National Institutes of Health
- National Science Foundation
- National Institute of Environmental Health Sciences
- National Institute of Health
- National Institute of Toxicology
- U.S. Environmental Protection Agency
- U.S. Food and Drug Administration
- U.S. Consumer Product Safety Commission
- National Toxicology Program
- Interagency Center for the Evaluation of Alternative Toxicological Methods
- OECD Test Guidelines Program