Model Name
Dermatitis, Contact, Phorbol Ester-Induced

Item Number
555010

Introduction
Topical application of Phorbol 12-myristate 13-acetate (PMA) on the ear of mice induces a pronounced inflammatory response mediated by protein kinase C (PKC). Activation of PKC is implicated in the pathogenesis of inflammation, which is including phospholipase A2-dependent arachidonic acid release and eicosanoid production. PMA-induced ear edema is commonly used to study the mechanisms of skin inflammation and evaluate the therapeutic efficacy.

Procedure Summary
Male ICR mice weighing 22 ± 2 g are used. Phorbol 12-myristate 13-acetate (PMA, 5 µg in 20µL ethanol) is applied topically to the anterior and posterior surfaces of the right ear. Test substance, dexamethasone and the vehicle (20 µL/ear) are topically administered 30 minutes before and 15 minutes after PMA challenge. Ear swelling is measured by a dial thickness micrometer gauge 6 hours after PMA challenge. Ear edema is calculated by subtracting the thickness of the left ear (normal control) from right ear (treated ear) as an index of inflammation. Percentage inhibition is calculated according to the formula: (Ic – It)/Ic x 100, where Ic and It refers to the increase of ear thickness (mm) both in the control and treated animals. One-way ANOVA and Dunnett's test are applied for comparison between treated and vehicle control groups. Significance is considered at p<0.05.

Suggested Testing
- n=6/group (study design dependent)
- Doses may be administered TOP, PO, IV, IP, and SC
- Assessments available: Body weight, Ear thickness, Ear weight, Biomarker analysis (protein or mRNA) and Histopathology

Turnaround Time(s)
- Acute Assay: In-Life completion in 2-4 weeks from sample receipt
- For Subacute Assays: 6 weeks to 3 months

Literature

Related Assay(s) (Item # - Assay Name - Species)
554010 - Dermatitis, Contact, Arachidonic Acid-Induced - Mouse
554310 – Dermatitis, Contact, Capsaicin-Induced – Mouse
554510 - Dermatitis, Contact, Croton Oil-Induced - Mouse
555510 - Dermatitis, Contact, Oxazolone-Induced - Mouse

Modified Protocols
We will readily accommodate client-specified alterations.

Laboratory
These assays are performed at our AAALAC accredited laboratory in Taipei.

For current details about our Company address and contact information, please reference our website http://www.pharmacologydiscoveryservices.com/company-info/
Animal Welfare
All aspects of this work are performed in general accordance with the Guide for the Care and Use of laboratory animals (National Academy Press, Washington, DC, 2011). The study protocol was approved by the Pharmacology Discovery Services IACUC and is performed with the oversight of veterinarians to assure the humane treatment of laboratory animals.

Reference Compounds
Aspirin, Betamethasone 17-Valerate, *Dexamethasone, Hydrocortisone, Indomethacin, Phenidone

Graph

*P<0.05, treated vs. vehicle control; one-way ANOVA followed by Dunnett’s test.

Last modified October 1, 2018