Model Name
Asthma, Airway Hyperresponsiveness (AHR), Ovalbumin-Induced

Item Number
568050

Introduction
In vivo pharmacology assays may serve to extend in vitro results or detect potentially important primary and/or secondary pharmacodynamic activities. Semi-quantitative or quantitative data can be generated on request.

Procedure Summary
Groups of 8 male BALB/c mice 6-7 weeks of age are sensitized with intraperitoneal injection of ovalbumin (OVA) emulsified in alum (0.1 ml/mouse) on day 1 and day 14. The animals are challenged with aerosolized ovalbumin (5% for 30 min) on days 21, 23 and 25. On day 26, non-invasive measurements of airway responsiveness are determined using whole body plethysmography and an increase in enhanced pause (Penh) is used as an index of airway obstruction. Responses to inhaled methacholine (10 mg/ml and 30 mg/ml for 5 min) are then measured and calculated as a percentage of respective baseline values. Dexamethasone (3 mg/kg), the standard reference agent, is administered once daily by gavage from day 18 to day 26. On day 26, dexamethasone is given 1 hr before measurements of baseline values. Dosing schedule of test compounds can be similar to dexamethasone or limited to day 26 (as aminophylline or salbutamol) before methacholine challenge. Inhibition of methacholine-induced Penh by 50 percent or more (>50%) indicates possible anti-asthmatic activity.

Penh = Pause x [PEP/PIP]
Pause = (Te / Tr) – 1

Penh reflects changes in the waveform of the box pressure signal from both inspiration and expiration (PIP, peak inspiratory pressure; PEP, peak expiratory pressure) and combines it with the timing comparison of early and late expiration (Pause).

Suggested Testing
- n=5/group
- Safety non-GLP: 3 doses + vehicle control groups, n=4–10/group
- Agonist and/or antagonist effects assessed at initial doses of 30–100 mg/kg as aqueous solutions or finely homogenized suspensions in 2% Tween 80/distilled water and administered p.o. or i.p. to mice, rats, guinea pigs (10 mL/kg); i.v., i.p., or s.c. in saline to mice (10 mL/kg), rats (5 mL/kg), guinea pigs (1 mL/kg)
- Automatic minimum effective dose (MED) determined when activity >50% detected in accordance with stated criteria
- 3 dose levels in safety non-GLP procedures

Turnaround Time(s)
- For Acute Assays: 4 weeks from sample receipt
- For Subacute Assays: 6 weeks to 3 months

Literature

Related Assay(s)  (Item # - Assay Name - Species)
204110* - Adrenergic β2 – Human
152000* - Phosphodiesterase PDE3 – Human
*provided by partner lab Eurofins Pharma Discovery Services

For current details about our Company address and contact information, please reference our website
http://www.pharmacologydiscoveryservices.com/company-info/
Modified Protocols
We will readily accommodate client-specified alterations.

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

Animal Welfare
All aspects of this work is 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
Aminophylline, Salbutamol

Last modified October 1, 2018