Int Immunopharmacol. 2019 Jun:71:1-6. doi: 10.1016/j.intimp.2019.02.041. Epub 2019 Mar 9.

Berberine suppresses mast cell-mediated allergic responses via regulating FcεRI-mediated and MAPK signaling

Shuilian Fu [1], Saihong Ni [1], Danni Wang [1], Meng Fu [1], Tie Hong [2]

Affiliations + expand

PMID: 30861392
DOI: 10.1016/j.intimp.2019.02.041

Abstract

The anti-allergic effect of berberine was evaluated in cellular and animal models of allergic responses. In this study, the results of the in vitro model of immunoglobulin (Ig) E-mediated mast cell degranulation showed that berberine significantly inhibited the release of β-hexosaminidase (β-HEX), histamine, IL-4 and TNF-α in rat basophilic leukemia cells (RBL-2H3 cells). Pretreatment with berberine prevented morphological changes in IgE-stimulated RBL-2H3 cells such as the recovery of an elongated shape. Pretreatment with berberine also suppressed the phosphorylation of antigen-induced Lyn, Syk, and Gab2, thus suppressing the downstream MAPK pathways. In the in vivo model of allergic responses, administration of berberine inhibited passive cutaneous anaphylaxis (PCA) in mice. The above results indicate berberine could suppress mast cell activation and allergic responses.

Keywords: Berberine; IgE; Mast cell; Passive cutaneous anaphylaxis.

Davallia mariesii Moore Improves FcεRI-Mediated Allergic Responses in the Rat Basophilic Leukemia Mast Cell Line RBL-2H3 and Passive Cutaneous Anaphylaxis in Mice.

PMID: 29200667 Free PMC article.

Inhibitory effect of the branches of Hovenia dulcis Thunb. and its constituent pinosylvin on the activities of IgE-mediated mast cells and passive cutaneous anaphylaxis in mice.

PMID: 25804702

Leaves and pseudostems extract of Curcuma longa attenuates immunoglobulin E/bovine serum albumin-stimulated bone marrow-derived cultured mast cell activation and passive cutaneous anaphylaxis in BALB/c mice.

PMID: 38042384

Coptisine Suppresses Mast Cell Degranulation and Ovalbumin-Induced Allergic Rhinitis.

PMID: 30469322 Free PMC article.

Antiallergic effect of fisetin on IgE-mediated mast cell activation in vitro and on passive cutaneous anaphylaxis (PCA).

PMID: 28797929

See all similar articles

Cited by

The Crosstalk between FcεRI and Sphingosine Signaling in Allergic Inflammation.

PMID: 36430378 Free PMC article. Review.

Inhibitory effect of rosmarinic acid on IgE-trigged mast cell degranulation in vitro and in vivo.

PMID: 38270683

Nutraceutical Aid for Allergies - Strategies for Down-Regulating Mast Cell Degranulation.
PMID: 34737578 Free PMC article. Review.

Modulation of the Immune Response to Allergies Using Alternative Functional Foods.
PMID: 38203638 Free PMC article. Review.

Glaucocalyxin A Attenuates Allergic Responses by Inhibiting Mast Cell Degranulation through p38MAPK/NrF2/HO-1 and HMGB1/TLR4/NF-κB Signaling Pathways.
PMID: 34007295 Free PMC article.

See all "Cited by" articles

MeSH terms

- Animals
- Anti-Allergic Agents / therapeutic use*
- Berberine / therapeutic use*
- Cell Degranulation
- Cell Line
- Disease Models, Animal
- Histamine / metabolism
- Humans
- Hypersensitivity / drug therapy*
- Immunoglobulin E / metabolism
- Interleukin-4 / metabolism
- Male
- Mast Cells / drug effects*
- Mast Cells / physiology
- Mice
- Passive Cutaneous Anaphylaxis / drug effects
- Rats
- Tumor Necrosis Factor-alpha / metabolism
- beta-N-Acetylhexosaminidases / metabolism

Substances

- Anti-Allergic Agents
- Tumor Necrosis Factor-alpha
- Berberine
- Interleukin-4
- Immunoglobulin E

- Histamine
- beta-N-Acetylhexosaminidases

Related information

PubChem Compound (MeSH Keyword)

LinkOut - more resources

Full Text Sources

Elsevier Science

Ovid Technologies, Inc.

Medical

MedlinePlus Health Information

Miscellaneous

NCI CPTAC Assay Portal