

We investigated the effects of geranium essential oil (GEO) on anaphylaxis. GEO can exert antioxidant and anti-inflammatory effects, but its roles in allergic reactions are incompletely understood. Here, we used mouse cells to show that GEO inhibited the degranulation of cultured mast cells (CMCs). Citronellol is the major component of GEO and inhibited CMC degranulation. The l-enantiomer of citronellol more effectively suppressed CMC degranulation than did d-citronellol. We also examined whether citronellol could inhibit the immunoglobulin (Ig) E-induced production of tumor necrosis factor (TNF)- α . Treatment with various concentrations of citronellol before CMC activation with IgE significantly inhibited the induction of TNF- α in a dose-dependent manner. Mechanistically, citronellol suppressed the phosphorylation of mitogen-activated protein kinase (ERK), which is critical for ERK activation and the production of inflammatory cytokines in mast cells. These findings suggest that citronellol may represent a candidate compound for the effective treatment of allergic diseases.

Citronellol inhibited degranulation and TNF- α production by mast cells.