Influence of UVB, UVA and UVA1 irradiation on histamine release from human basophils and mast cells in vitro in the presence and absence of antioxidants.

Abstract:
UV irradiation is widely used for the treatment of atopic eczema. In recent years, UVA1 phototherapy has gained increasing attention. This study analyzed the influence of different UV wavelengths--especially UVA1--on histamine release from human basophils and mast cells. The modulation of this parameter might be responsible for some of the therapeutic effects of UV irradiation. Enriched human basophils and human mast cells (HMC1 cell line) were irradiated with increasing doses of UVB, UVA and UVA1 in vitro. After irradiation, different stimulants were added to induce histamine release. In additional experiments, basophils were preincubated with superoxide dismutase, ascorbate or trolox to study the role of antioxidants in the modulation of histamine release after UV irradiation. UVA and UVA1 significantly inhibited histamine release from basophils and mast cells. UVB only had an inhibitory effect on mast cells. Preincubation with superoxide dismutase and ascorbate did not influence the inhibitory effect of UVA1 on basophil histamine release, whereas trolox decreased significantly the histamine release from nonirradiated basophils.