Study on the anti histaminic activity of Achyranthes aspera L. and Tephrosia L. on experimental rats.

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ABSTRACT

This presence of histamine which causes burning, sensation, redness and inflammation of tissue during allergic response. However when histamine is released, it triggers a series of dramatic actions. The blood vessels become larger and the speed of the blood flowing through them slow. These changes in size, volume of cells and blood vessels allow fluid to leak through cell walls. This fluid causes swelling of the surroundings tissues. The inflamed tissue become irritated and swollen. Histamine also cause smooth muscles to contract.

History is covered by over secretion of histamine from the mast cells. There are number of histamine blockers which may inhibit the release of histamine. The plant products in the form of secondary metabolites particularly 'saponins' when given to the experimental animals inhibit histamine by suppressing the H1 and H2 receptors. Therefore the problem will provide in-vivo mechanism of histamine blockers and will help us to understand the histological details of the mechanism.

KEYWORDS: Hostaminic activity, Achyranthes aspera L., Tephrosia L.

INTRODUCTION

Histamine is present in all animals and vegetables tissues. It is a chemical which is secreted by mast cells after they get activated do to offending allergens. This presence of histamine which causes burning, sensation, redness and inflammation of tissue during allergic response. However when histamine is released, it triggers a series of dramatic actions. The blood vessels become larger and the speed of the blood flowing through them slow. These changes in size, volume of cells and blood vessels allow fluid to leak through cell walls. This fluid causes swelling of the surroundings tissues. The inflamed tissue become irritated and swollen. Histamine also cause smooth muscles to contract. The effect of histamine on these muscles can provoke an asthma attack or induce pain stomach (Gupta, 2000)

There are categories of medicine that competes with histamine released after allergic response to nullify its destructive effects on the tissue. Doctors have been traditionally been taught to avoid using antihistamines in patients with asthma because of the potential of antihistamines to dry up the secretions in the lungs and worsen asthma some patients with mild asthma actually stop wheezing when they take an antihistamine. People who experience increased coughing and wheezing after taking antihistamines should avoid their use.

Looking to the importance of histamine in bronchial asthma, it was proposed to undertake the problem with following main and objectives viz.

1. To isolate anti-histaminic active principles from two important plants viz. Achyranthes aspera L. and Teprosial purpuria L.
2. To perform histopathological details of the secretory activity of the mast cells in areolar connective tissue.

BRIEF REVIEW OF WORK ALREADY DONE IN THE FIELD

Gupta et. al., (1968) have proposed the development of anti-allergic and anti-histaminic activity in relation to histamine releasing effects of a plant saponin from Clerodendron serratum on disruption of the mesenteric mast cells of rats. Rats were sensitized by injecting subcutaneously 0.5 ml. of horse serum along with 0.5 ml. of triple antigen containing 20000 million of Bordetella pertussis organisms. Torres et al., (2000) have noted the relaxant effect of a plant extract on vascular smooth muscles of the rat.

Vadnere et al., (2007) also have reported that Cleroderdrom phlomidis possess anti-histaminic, mast cell stabilizing and decrease capillary permeability effect and hence possess potential role in the treatment asthma.

NOTE WORTHY CONTRIBUTION IN THE FIELD OF PROPOSED WORK

Saxena (2003) have presented a paper in the WOCMAP III, at Chiang Mai University and reported the smooth muscle relaxant activity of alcoholic extract of Achyranthus aspera against isolated tracheal muscles of albino rats.

Kumar et al., (2010) reported that methanolic extract of stem barks of Ailanthus excelsa possess anti histaminic activity by employing in vivo and in vitro screening models in Guinea pigs.

Mitra et al., (1999) have evaluated anti-asthmatic anti anaphylactic activity of herbal formulation for 10 and 14 days, in guinea pigs and rats respectively, offered marked protection against anaphylactic shock- induced bronchospasm.

Pundit et al.,(2008) evaluated that the ethanolic extract of Curculigo orchiodies for anti asthmatic activity by using isolated goat tracheal chain preparation and isolated guinea pig ileum preparation. This study confirmed that ethanolic extract of Curculigo orchiodies is effective against histamine- induced concentration and the extract exhibits maximum relaxant effect in asthma.

PROPOSED METHODOLOGY DURING THE TENURE OF THE RESEARCH WORK

The proposed study will follow the following methods:

1. Collection and preparation of plant material:

The selected plant will be collected from the study are in polythene bags and washed at room temperature by 1% potassium permanganate solution. Dried it into shade at room temperature and the weight of the fresh material and dried under shade both will be noted to know the loss in weight. The plant material will be crushed into powder and used for the extraction.

2. Extraction, Isolation and Purification method:

The powdered plant material after proper authentication of the plant from some research institute such as VSI Pune will be carried out in order of increasing order of polarity. The extraction will be done either in the soxhelt or as prescribed by Harborn (1984). The crude material will be preserved in refrigerator till it is used further. Purification of the compound will be done by chromatographic technique such as Column, TLC and if required by HPLC.

3. Characterization and structural elucidation method:

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The purified plant material will be sent to the SAIF CDRI OR IIT Madras for the following analysis viz. IR, UR, CNMR, NHMR and Mass spectrum.

On the basis of spectrum obtained, the structure of the active anti-diabetic principles will be worked out and Chemical formula, Molecular weight and IUPAC name of the compound will be determined.

4. EXPERIMENTAL BIOASSAY

These antihistaminic active compounds will be tested in the laboratory in experimental rats. All rats will be sensitized by injecting subcutaneously 0.5 ml. of horse serum along with 0.5 ml of triple antigen containing 20,000 million Bordetella Pertussis organisms (Gupta et al., 1973). These sensitized rats will be divided into five groups. Group 1 will receive water and served as control. The rats of II, III and IV will be orally administered with herbal formulation of different doses for the same duration. The rats of group V will be given 10 mg/kg of perdnisolone (reference drug) orally for 4 days. Following active anaphylaxis that rats will be scarified and the blood will be collected by decapitation and the serum will be separated aseptically. Preparation of blocks and section cutting followed by mast cell staining will be carried out during the tenure of the research work.

STATICAL ANALYSIS

The results will be expressed as mean +_ SEM and analyzed statically using student t-test to find out the level of significance.

EXPECTED OUTCOME OF THE PROPOSED WORK

Asthma is covered by over secretion of histamine from the mast cells. There are number of histamine blockers which may inhibit the release of histamine. The plant products in the form of secondary metabolites particularly ‘saponins’ when given to the experimental animals inhibit histamine by suppressing the H1 and H2 receptors. Therefore the problem will provide in-vivo mechanism of histamine blockers and will help us to understand the histological details of the mechanism.

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