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EVALUATION OF ANTI-HISTAMINIC ACTIVITY OF SIDDHA DRUG MADHULAI NEI IN MALE GUINEA PIG

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Abstract: This study was conducted to investigate the Antihistaminic activity of Siddha trial drug *MADHULAI NEI* in Male guinea pig. *Madhulai nei* is used in the treatment of *NEERKANAMAANTHAM* (ACUTE NASOPHARYNGITIS). Male guinea pig weighing 350– 400g was kept in fasting condition 18 hours prior to commencement of experiment and given water ad libitum. It was then sacrificed by a blow to the head and exsanguinated as per CPCSEA recommended guidelines. The ileum was dissected and suspended in a 25 ml organ bath with tyrode's solution. The antihistaminic effect of madhulai nei was tested in this bioassay at various concentrations (10, 20 and 40 µg/ml), in terms of their ability to prevent the histamine contractions when they were added to the bath 5 min before histamine and compared with the standard drug Chlorpheniramine maleate (10µg/ml). Responses to histamine were recorded as changes in height from baseline and expressed as percent of maximum response of the histamine. The CRC was constructed with a 20 min-rest between each. The test drug madhulai nei ($P<0.05$) was found to be effective in their antagonism against histamine at 20 and 40 µg/ml when compared with that of the standard antagonistic drug. It is manifest that the madhulai nei had shown marked antihistaminic activity in isolated tissue of guinea pig ileum.

Keywords: Madhulai Nei, Siddha, Antihistaminic, Neerkanamaantham, Acute Nasopharyngitis.



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INTRODUCTION

The common cold (redirected from acute viral nasopharyngitis) is a viral infection of the upper respiratory system, colds sometimes called rhinovirus or coronavirus infection are the most common illness to strike any part of the body. In Siddha system of medicine it is called "Kanam". It is one of the commonest infectious diseases. Kanam has been classified into 24 types in Siddha system. Neerkanamaantham (ACUTE NASOPHARYNGITIS) is one among them. It affects the upper respiratory tract causing cough, fever, irritation of throat, lack of appetite and dysuria. Acute upper respiratory tract infections (URTIs) are common diseases in young children and contributes to approximately 20% of mortality in children younger than 5 years of age. Neerkanamaantham is a disease to give more troublesome in childhood (3 to 7 yrs of age group). Maathulai Nei is indicated for all types of Kanam. It which possess mainly *Punica granatum*, *Myristica fragrans*, *Tinospora cardifolia*, and *Elattera cardomomum* Linn, having Antitussive, Antibacterial, Expectorant, Antipyretic, Antimicrobial activities. Maathulai Nei to evaluate its efficacy in the treatment of Neerkanamaantham are commonly used in clinical practice from several years in India.

MATERIALS AND METHODS:

Preparation of Madhulai nei:

Ingredients:

- *Punica granatum*,
- *Myristica fragrans*,
- *Tinospora cardifolia*,
- *Elattera cardomomum* Linn,

Preparation:

Method of Preparation:

Make Saathikaai, Saathipathiri, Eaelam into fine powder. Mix butter with mathulai sammolam paste and seenthil sarkarai, then add the above powder into it. Keep in a slow flame until it turns into ghee form (Wax texture).

Indication: All types of Kanam

EVALUTION OF ANTI-HISTAMINIC

Animal selection:

Male guinea pig weighing 350– 400g was kept in fasting condition 18 hours prior to commencement of experiment and given water ad libitum. Pelleted feed supplied by Sai meera foods Pvt Ltd, Bangalore. The experimental procedures described were approved by the Institutional Animal Ethics Committee of Vels University, Pallavaram, Chennai- 117 (Approval no – XIV/VELS/PCOL/22/2000/CPCSEA/IAEC/20.11.2014)

ISOLATED GUINEA PIG ILEUM PREPARATION

Procedure:

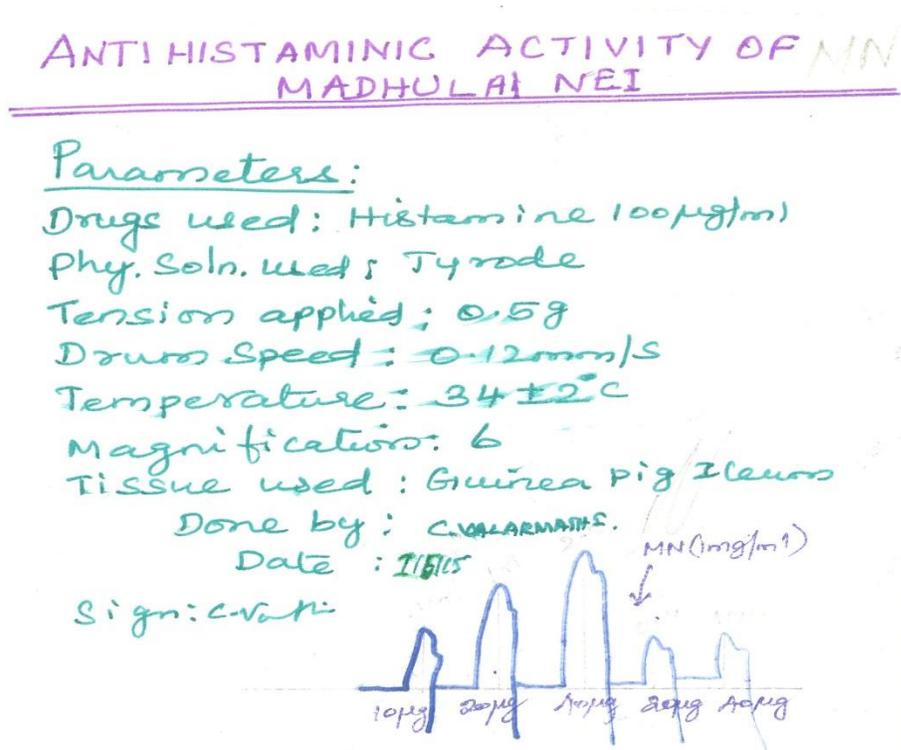
Male guinea pig weighing 350– 400g was kept in fasting condition 18 hours prior to commencement of experiment and given water ad libitum. It was then sacrificed by a blow to the head and exsanguinated as per CPCSEA recommended guidelines. The ileum was dissected and suspended in a 25 ml organ bath with tyrode's solution, containing NaCl 8.0, KCl 0.2, CaCl₂ 0.2, MgCl₂ 0.1, NaHCO₃ 1.0, NaH₂PO₄ 0.05, and Glucose 1.0 gm/liter, bubbled with carbogen (5% CO₂/95% O₂). The temperature was maintained at 34.5°C and oxygenated continuously. Initial tension was 0.6g and stabilization time was 45–60 min. Load was adjusted to 0.5g; the magnification of 5-7 folds and bath volume of about 15ml was maintained. The preparation was washed every 10 min with tyrode solution. After an initial equilibration period of about 30–45 min, increasing concentrations of histamine were added to the bath and the concentration–response curve was recorded with a contact time of 90 seconds.

The antihistaminic effect of madhulai nei was tested in this bioassay at various concentrations (10, 20 and 40 µg/ml), in terms of their ability to prevent the histamine contractions when they were added to the bath 5 min before histamine and compared with the standard drug Chlorpheniramine maleate (10µg/ml). Responses to histamine were recorded as changes in height from baseline and expressed as percent of maximum response of the histamine. The CRC was constructed with a 20 min-rest between each. The mean maximal response obtained from the first concentration–response curve was taken as the 100% response.

Table-1: Effect of Madhulai Nei on isolated Guinea pig ileum preparation

S. No	Dose of Histamine ($\mu\text{g/ml}$)	Maximum response in cms	
		Histamine alone	Histamine+Madhulai Nei (1mg/ml)
1	10	1.1 \pm 0.06	--
2	20	1.8 \pm 0.10	0.9 \pm 0.08*
3	40	2.5 \pm 0.14	1.0 \pm 0.07*

Values are expressed in mean \pm SEM, *p< 0.05 compared with histamine induced contraction (25mm as 100%); n=3.



Statistical analysis

Results were expressed as mean \pm SEM. The data was analyzed by one way ANOVA followed by Dunnet's multiple comparison test for isolated ileum preparation. P<0.05 and P<0.001 were considered to be statistically significant.

RESULTS AND DISCUSSION

The prevalence of allergic diseases in Western countries has risen substantially over the last few decades. Allergy may be defined as the potential for development of immunologically mediated reactions to allergens which, in 80% of the allergy-based clinical diseases in man, is mediated by IgE antibodies. Exposure to an antigen sets off an immune-mediated cascade of inflammatory events. First, the allergen is broken down into smaller peptides and exposed to T cells by antigen-presenting cells. The T cells produce cytokines such as interleukin 4 (IL-4) that induce B cells to produce antigen-specific IgE, which binds to high affinity FcεRI receptors on basophils and/or mast cells.

On a second encounter with the same allergen, the allergen cross-links the IgE bound to FcεRI receptors, activating them and causing the release of inflammatory mediators such as histamine, prostaglandins, and leukotrienes. Preformed mediators, such as histamine, neutral proteases and other enzymes, and chemotactic factors, are present in granules and released by fusion of the granule membranes with the cell membrane. Other substances, such as cytokines, and lipid mediators, such as prostaglandins and cysteinyl leukotrienes (LTC₄, LTD₄, and LTE₄) are newly synthesized and secreted following cross-linking. Current treatment of allergic symptoms consists of antihistamines, leukotriene receptor antagonists, mast-cell stabilizers, and corticosteroids. Some of these treatments are known to have severe adverse effects.

Antihistaminic activity of madhulai nei was tested at various concentrations of 10 - 40 µg/ml, and Concentration-response curves were plotted to check their ability to reverse the activity of Histamine on prior (5 min) contact with the ileum. When evaluated against Histamine, the test drug madhulai nei at 20 and 40 µg/ml significantly ($P < 0.05$) antagonized the contraction of guinea pig ileum, in a competitive and concentration dependent manner. Fig.1 represents the contractile response elicited by Histamine on guinea pig ileum in presence and absence of the madhulai nei.

Test drug madhulai nei showed moderately significant antagonism ($P < 0.05$) only at 40 µg/ml concentration when compared to control and the % maximal response wasn't decrease at lower concentrations of 10 and 20 µg/ml. Thus the exposure of guinea pig isolated ileum to madhulai nei (20 and 40 µg/ml) for a period of 5 min produced a parallel, rightward shift of the Histamine concentration-response curve as is evident from the Fig.1.

CONCLUSION

In conclusion, the test drug madhulai nei ($P < 0.05$) was found to be moderately effective in their antagonism against histamine at 20 and 40 µg/ml when compared with that of the standard

antagonistic drug. From the present findings, it is manifest that the madhulai nei had shown marked antihistaminic activity in isolated tissue of guinea pig ileum.

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