Short term effect of Tinospora cordifolia in Allergic Rhinitis

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Abstract

Objective: *To study the short-term efficacy of Tinospora cordifolia (TC) in allergic rhinitis.*

Method: *This was a randomized double blind placebo controlled trial undertaken in 75 out patients of allergic rhinitis (AR). After obtaining informed witnessed written consent, the participants were clinically examined and nasal smear done. Presence of AR symptoms sneezing, nasal obstruction, nasal discharge, pruritus, and sign of hypertrophy of the inferior / middle turbinate were noted. The participants were given TC or matching placebo for 15 days and recalled after 15 days for compliance measurement, review, ADR monitoring and refill of the trial medicine. At the end of the trial baseline investigations were repeated and medicine was decoded.*

Results: *It was seen that in TC treated group there was significant improvement in symptoms of AR within first 15 days and improved further in next 15 days .The clinical finding of nasal mucosa turning pink from blue supported the efficacy of TC.*

Conclusion: *Improvement in symptoms of AR, without any ADRs indicates that TC can be used as a safe, effective, indigenous alternative in allergic rhinitis.*

Key words: *Herbal extract; Immunostimulation*

Introduction

Allergic rhinitis (AR) is a common ENT disease characterized by sneezing, rhinorrhea, nasal congestion and pruritus. AR and its complications are responsible for high morbidity and absenteeism. AR impairs patients' quality of life (Bousquet et al, 1994). H_1 antagonists, Decongestants, Glucocorticoids, Cromolyn sodium have been commonly used for treatment of AR (Naclerio, 1991) but are accompanied by ADRs.

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Tinospora cordifolia (TC) (Willd) Miers, family Menispermaceae is indigenous to India. It has been used in Ayurveda for general tonic, antispasmodic, anti-inflammatory, anti-arthritic, anti-allergic, anti-diabetic effects (Sharma et al, 2001) and as "*rasayana*" (Thatte and Dahanukar, 1997). Charaka has described rasayana as that which increases life span, promotes intelligence, improves memory and provides freedom from diseases, indicating immunostimulant effect (Sharma, 1981). TC has been shown to have immunostimulant effect (Dahanukar and Thatte, 1997). Since the immune system is compromised in AR, this study was planned to evaluate the short-term efficacy of TC in AR.

Method and Material

This was a randomized, double blind, placebo controlled trial conducted on outdoor basis in patients attending ENT OPD of Indira Gandhi Government Medical College, Nagpur. Patients of either gender, diagnosed to be suffering from AR, from the age group of 18-60 years were approached to participate in the trial. Detailed information about the trial was provided to them. From those who volunteered to participate, informed witnessed written consent was taken. The exclusion criteria were pregnant and lactating women; clinical evidence of bacterial sinusitis; associated chronic diseases like hypertension, IHD, diabetes, psychiatric and CNS disorders; patients taking concurrent medication for chronic diseases; history of alcohol or drug consumption; presence of cyanosis, clubbing or lymphadenopathy or patients having received antihistaminic or steroid therapy in six weeks prior to beginning of trial.

M/s Pharmanza (India) supplied the active drug and matching placebo. Each tablet of TC (Tinofend ®) contained 300 mg of standardized extract obtained from water extract of stem of TC. It contained more than 5% bitter principles and was tested for presence of cordioside and tinosporoside by HPLC.

After clinical examination of the patients by the ENT surgeon, the baseline data was collected. In doubtful cases radiograph of paranasal sinuses was done to rule out sinusitis. Patients suffering from acute sinusitis were treated with antibiotics for one week, and then given wash out of one week and later entered in the trial. Out of 75 participants, 37 were randomly allocated to group A and 38 to group B, to either receive coded TC 300 mg 1 tab thrice daily or matching placebo in the same formulation, packing, size, weight, colour and dose for one month. The trial medicine was issued for 15 days and patients

recalled for review. The patients at the time of refill were given a questionnaire in which they were asked to rate their symptoms by checking the box 0%, 25%, 50%, 75% and 100% according to the relief they got in each symptom. The patients were asked to bring the unused medicines and container during the follow up. 80% consumption was considered to be compliant. All the returned medicines were discarded. Baseline investigations were repeated at the end of the trail. The participants were followed up for 15 days after stoppage of the intervention. They were at liberty to withdraw from the trial anytime. As rescue medication, tablet Cetrizine 5 mg 1 OD and depending on the clinical need capsule Amoxicillin 250 mg TDS was given.

Results

During the trial one patient developed sinusitis requiring antral puncture and was dropped. After decoding he was found to be on TC. Three patients opted for rescue medication because of lack of relief from symptoms, hence were dropped. After decoding they were found to be from placebo group. The remaining 71 patients completed the trial.

Table 1 shows that AR was more common in 20-30 year age group. Nasal discharge, sneezing, nasal obstruction and nasal pruritus were the common presenting complaints in AR. No significant difference was found in the age groups and presenting complaints of the participants of the active or placebo groups.

Table 1: Presenting complaints of the Allergic rhinitis patients

Age group (years)	TC	Placebo	Total
20-30	26	22	48
30-40	5	5	8
40-50	2	6	10
50-60	3	2	5
Total	36	35	71
Complaints			
Nasal discharge	35	33	68
Sneezing	35	29	64
Nasal obstruction	53	29	62
Nasal pruritus	28	25	53
Nasal pain	2	0	2
Headache	1	0	1

Table 2 shows that with 15 days treatment, the nasal mucosa changed from blue to pink, in 34.28% of patients on TC as against only 3.57% on placebo. After 30 days of treatment, there was further improvement in number of patients showing pink coloration of mucosa.

In TC treated group there was significant, decrease in number of patients with nasal discharge and inferior turbinate hypertrophy after 15 days. After 30 days of TC treatment the middle turbinate hypertrophy was not seen in any of the patients. On comparison of two intervention groups it was seen that the number of patients showing symptoms of AR was significantly lesser with 15 as well as 30 days TC treatment.

Table 2: Presence of symptoms in patients of Allergic rhinitis

	Tinospora			Placebo		
	Pretreatment	After 15 days	After 30 days	Pretreatment	After 15 days	After 30 days
Nasal Mucosa	35 (blue)	12 (pink) 34.28%#	15 (pink) 42.85%	28 (blue)	1 (pink) 3.57%*	4 (pink) 14.28%*
Nasal Obstruction	33	19 57.57% NS	20 60.60%#	29	23 79.31%*	25 86.20% ns
Nasal Discharge	35	16 45.7%#	17 48.7%#	33	30 90.90%*	31 93.90%*
Inferior Turbinate Hypertrophy	27	19 70.57%#	16 59.25%#	22	21 95.45% ns	20 90.90% ns
Middle Turbinate Hypertrophy	7	4 57.14% NS	NIL 0.0%#	6	6 100% ns	6 100*

When compared to baseline data within TC group: # significant ($p < 0.01$); NS = not significant

When TC and placebo groups are compared: * significant ($p<0.01$); ns = not significant

Figure 1: Percentage relief in allergic rhinitis patients from sneezing after 15 days treatment

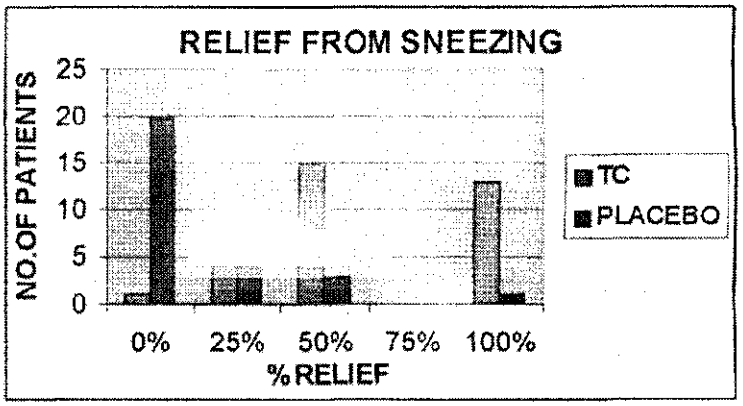


Figure 1 shows that after 15 days of treatment, 13 patients of AR from TC group reported 100% relief from sneezing while 20 patients from placebo group did not have any relief.

Figure 2: Percentage relief from nasal obstruction in allergic rhinitis patients after 15 days treatment

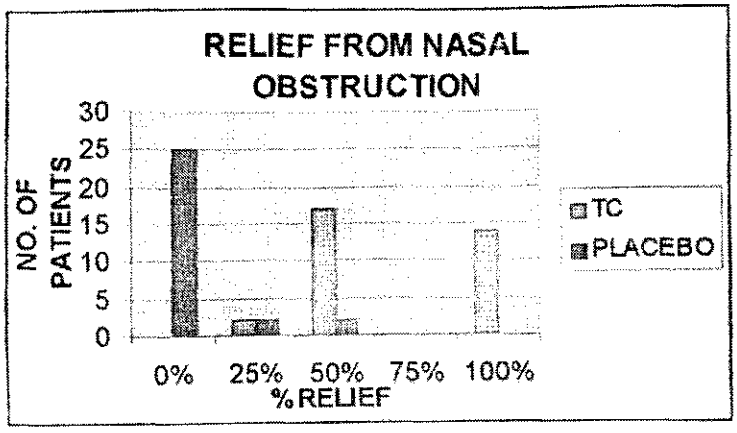
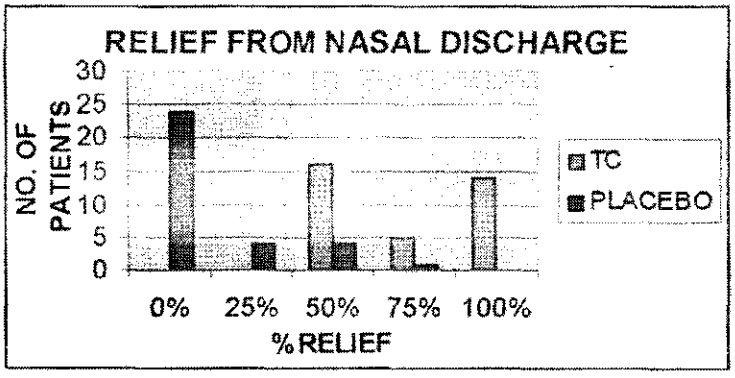


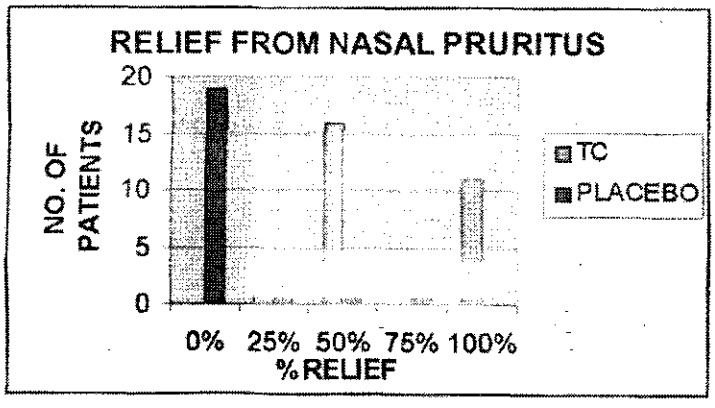
Figure 2 shows that number of AR patients with 100% relief from nasal obstruction in TC treated group was 14 while in placebo treated group there were 25 patients with no relief at all.

Figure 3: Percentage relief from nasal discharge in allergic rhinitis patients after 15 days treatment



From figure 3 it can be seen that there were 14 patients with 100% relief from nasal discharge in the TC treated group while 24 patients from placebo treated group did not have any relief.

Figure 4: Percentage relief from nasal pruritus in allergic rhinitis patients after 15 days treatment



Figures 4 shows that after 15 days of the treatment, 100% relief from nasal pruritus was found in 11 patients in TC treated group as against 19 patients who did not have any relief with placebo. Relief from all the symptoms of AR improved after 30 days.

Discussion

Individuals suffering from AR have IgE antibodies that bind to high affinity receptors on mast cells and basophils, and other cells like eosinophils, monocytes and platelets (Tada and Ishizaka, 1970, Melewicz and Spiegelberg, 1980, Grangette et al., 1989). On nasal re-exposure to antigen in AR, the mast cells degranulate, releasing various mediators of inflammation (Gomez et al., 1986) causing itching, sneezing, nasal discharge and congestion in more than 90% of the patients. Re-exposure to the allergen induces immediate and delayed response in the form of recurrence of symptoms characterized by influx of eosinophils, neutrophils, basophils and mononuclear cells (Bascom et al 1988 a, b). The eosinophils are reduced by treatment with topical steroids and immunotherapy (Mygind et al., 1978, Furin et al., 1991).

TC is known to have powerful immunostimulant effect (Dahanukar and Thatte, 1997). Pretreatment with TC provided protection against induced infections in mice (Thatte et al, 1992) and rats (Dahanukar et al, 1988). The aqueous extract of TC stimulated peritoneal macrophage in a dose dependent manner (Rege and Dahanukar, 1993), suggesting activation of macrophage system is essential for the non-specific effects of TC. The primary target of TC is believed to be the macrophages, which play key role in the generation of immune response.

TC decreased the histamine-induced bronchospasm in guinea pigs, decreased capillary permeability in mice and reduced number of disrupted mast cells in rats (Nayampalli et al., 1982, Nayampalli et al., 1986). In patients with obstructive jaundice, addition of TC to routine surgical procedure increased the survival rate and also increased polymorpho-nuclear leukocyte functions (Bapat et al., 1995).

A herbo-mineral preparation containing TC, *Rubia Cordifolia* and 6 other ingredients showed

promising antiallergic activity in case of rhinitis, which was devoid of side effects, even after long-term use (Grewal et al., 1985). We used TC as a single ingredient and no ADR was seen with it.

In our study there was significant improvement in the AR symptoms of sneezing, nasal obstruction, nasal discharge and pruritus. These findings correlated well with clinical finding of change in colour of nasal mucosa from bluish to pink in patients on TC. Pink coloration along with symptomatic improvement is considered to be sign of good response (Grewal et al., 1985).

The patients who were on TC were satisfied with the treatment, with only one-drop out due to development of sinusitis during early week of the trial. No patient from the TC group went for the rescue medicine. As compared to this the patients from placebo group constantly complained of no relief of symptoms and needed continuous counseling to continue with the study. In the placebo group there were three dropouts and three patients asked for rescue medication, when the symptoms were bothersome.

Conclusion

Extract of *Tinospora cordifolia,* a known immunostimulant significantly decreased the symptoms of allergic rhinitis after 15 days. Clinical findings validated efficacy of TC. Because of its efficacy, tolerability and absence of serious ADRs, it can be used in the treatment of allergic rhinitis.

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