

RESEARCH ARTICLE

Role of honey as adjuvant therapy in patients with sore throat

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ABSTRACT

Background: Honey is a natural product which has been used since ages for curing of various ailments. **Aims and Objectives:** To evaluate the effect of honey for control of infection and inflammation in patients with sore throat. **Materials and Methods:** A total of 200 patients with sore throat were taken up for the study. 100 patients, in the study group, were given one tablespoon of honey twice a day along with anti-inflammatory drugs, antibiotics, and antiseptic gargles. Remaining 100 patients in control group were given other same medications without honey. Patients were evaluated after 5, 10 and 15 days for throat congestion, fever, pain, patient satisfaction, and other criteria. **Results:** There was faster relief of signs and symptoms of sore throat in the study group as compared to control group. There was greater patient satisfaction in the study group. **Conclusion:** Honey is effective in faster recovery of signs and symptoms of sore throat having antibacterial and anti-inflammatory properties without causing any side effects.

KEY WORDS: Fever; Honey; Inflammation; Pharyngitis; Tonsillitis

INTRODUCTION

Medicinal importance of honey is known since ancient times. It is said to possess antimicrobial property as well as wound healing activity.^[1] Honey though mainly made up of sugars and water also contains vitamin B complex and C with lots of minerals such as calcium, potassium, and zinc.^[2] Its broad spectrum antibacterial property against pathogenic bacteria and oral bacteria like staphylococcus and pseudomonas has been proved.^[3] Honey is hygroscopic so it can draw moisture out of the environment and dehydrate bacteria and its high sugar content and low-level pH also prevent microbes from growth.^[4] Honey is known

for its anti-inflammatory and antioxidant properties in literature.^[5]

Sore throat is one of the common symptoms of patients visiting our ear, nose and throat (ENT) outpatient department (OPD). It can be because of various inflammatory and infective causes such as allergies, reflux disease, sinus drainage, and tonsillitis. Sore throat can be of viral or infective etiology.^[6] Various treatments tried for sore throat have not given satisfactory results. In various studies, local residents have been found to use honey for pharyngitis and respiratory ailments.^[7] However, no scientific data are available in literature regarding the same. Hence, we plan to conduct this study to find out if honey has some role as an antibacterial, anti-inflammatory, and antioxidant in treatment of sore throat

MATERIALS AND METHODS

This study was conducted on the patients visiting ENT and medicine OPD of our medical college and hospital with

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symptoms of sore throat from December 2015 to November 2016. 200 patients with signs and symptoms of sore throat aged above 18 years of age were enrolled in this study after taking written consent from the patients. The approval of Institutional Ethical Committee was taken. Exclusion criteria were patients with a history of diabetes, history of pollens and bees allergy, allergic to honey those who were already on treatment for sore throat and those with dislike to intake honey. All the patients were examined and followed up by the authors performing this study.

The patients were randomized alternatively into study and control group. 100 patients in the study group were advised to intake one tablespoon of honey twice a day slowly over few minutes along with anti-inflammatory drugs, antibiotics, and antiseptic gargles. Remaining 100 patients in the control group were put only on antibiotics, anti-inflammatory drugs and gargles without honey. The above treatments were given maximum for 15 days or till the patients fully recovered from sore throat whichever is earlier.

The patients were assessed after 5 days, 10 days, and 15 days after starting the treatment. The assessment points were as follows:

1. Time to recovery - time taken to resolution of all signs and symptoms of sore throat
2. The patients were assessed for subjective symptoms like pain in throat, difficulty in swallowing and fever at each visit
3. The oropharynx was examined at each visit for congestion and other signs of sore throat
4. Complications - The patients were assessed for need for hospitalization during the treatment period due to any complications of sore throat such as high-grade fever, dehydration, and severe painful swallowing
5. The patient satisfaction was assessed according to LIKERT SCALE as 1 - completely satisfied, 2 - somewhat satisfied, 3 - no change/painful, 4 - not satisfied/increased pain at each visit
6. The patients were enquired about any side effects on taking honey.

RESULTS

A total of 200 patients who gave consent were enrolled in this study. All the patients had complaints of sore throat. Data were collected and analyzed. Patients above the age group of 18 years were taken in the study. There was an equal incidence of sore throat in all the age groups. Male and female patients were almost equal (Table 1).

About 200 patients with sore throat were taken up for the study. 100 patients in the study group were given one tablespoon of honey twice a day along with anti-inflammatory drugs, antibiotics, and antiseptic gargles. Remaining 100 patients

in control group were given other same medications without honey. Patients were evaluated after 5, 10 and 15 days for throat congestion, fever, pain, patient satisfaction, and other criteria.

There was faster recovery from sore throat in study group using honey than control group (Table 2).

Regarding individual signs and symptoms, there was much faster recovery from fever within 5 days in the study group as compared to control group (Table 3). The signs of oropharyngeal congestion also had faster recovery in the study group. There was no significant difference in patients lost to follow-up in both groups (Table 3).

Regarding complications of sore throat, almost equal number of patients in both groups needed hospitalization due to high grade fever, severe odynophagia, dehydration, or other upper respiratory tract complications (Figure 1).

Regarding patient satisfaction, patients in study group with honey were more satisfied as compared to control group. These results were more evident at first follow-up visit after 5 days (Table 4).

There were no side effects noted of honey in patients using honey in the study group.

DISCUSSION

The role of honey as anti-inflammatory, antibacterial, and antioxidant agent was investigated in this study. The aim of the study was to evaluate honey in controlling inflammation and infection in patients with sore throat and its affect on patient satisfaction and to study its adverse effects if any. We have used commercially available honey for this study. All the patients were initially examined and followed up

Table 1: Age and sex distribution

Age group	Male	Female	Total
18-40 years	43	39	82
41-60 years	33	37	70
>60 years	23	25	48
Total	99	101	200

Table 2: Time to total recovery from sore throat

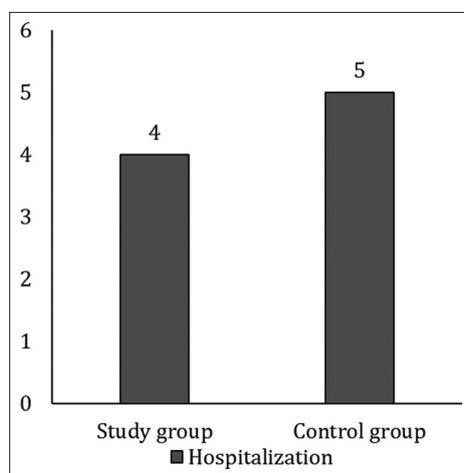
Time taken	Study group (n = 100)	Control group (n = 100)
<5 days	45	38
5-10 days	28	32
10-15 days	11	14
Not recovered after 15 days	7	8
Lost to follow-up	9	8

Table 3: Relief of signs of sore throat

Signs	Initial visit		1 st follow-up (after 5 days)		2 nd follow-up (after 10 days)		3 rd follow-up (after 15 days)	
	Study group	Control group	Study group	Control group	Study group	Control group	Study group	Control group
Fever	38	36	18	26	5	7	2	2
Oropharyngeal congestion	100	100	48	56	18	22	7	8
Lost to follow-up	-	-	7	6	9	8	9	8

Table 4: Patient satisfaction

Patient satisfaction	1 st follow-up (after 5 days)		2 nd follow-up (after 10 days)		3 rd follow-up (after 15 days)	
	Study group	Control group	Study group	Control group	Study group	Control group
Completely satisfied	24	18	64	57	79	77
Somewhat satisfied	24	23	8	11	3	3
No change	20	21	7	9	3	3
Not satisfied (increased pain)	25	32	12	15	6	9

**Figure 1: Need for hospitalization**

by the authors performing this study in ENT and medicine OPD. As it included subjective criteria, only adults above age of 18 years were included in this study. There was faster relief of signs and symptoms of sore throat in study group as compared to control group. There was greater patient satisfaction in study group.

Sore throat is clinical evidence of tonsillitis or pharyngitis and is very common in everyone's life.^[8] According to Bisno 44% of patients with sore throat had infective etiology.^[9] In our study also we found that 74 patients (37%) had fever which is a sign of infection (Table 3). Other causes of sore throat according to literature are allergies and reflux disease. According to various studies recurrence rate of sore throat varies between 16% and 20% and need for hospitalization due to complications are around 3-4%.^[9] In our study, 9 patients (5%) needed to be hospitalized due to causes such as high-grade fever, severe odynophagia, dehydration and other

pulmonary complications (Figure 1). 15 (8%) patients in our study had residual or recurrent disease even after 15 days of treatment (Table 1).

Honey is a common household product used since ages for various treatments and is easily accessible and nonexpensive.^[10] It is made up of 181 components^[11] mainly composing of fructose, glucose, fructooligosaccharides, amino acids, vitamins, minerals, enzymes, and water.^[12] The main enzymes in honey are invertase, amylase and glucose oxidase.^[13] Glucose oxidase produces hydrogen peroxide which has antimicrobial activity. In history Indian, Egyptian and Greek texts have shown use of honey as antiseptic.^[14] Van Ketel, in 1892, first recognized antimicrobial activity of honey.^[15] Honey by drawing moisture out dehydrates bacteria. It is pH and sugar content also inhibits micro-organisms.^[16] In a study by Olaitan et al., authors found honey to be inhibitory on both Gram-positive and Gram-negative, aerobes and anaerobes.^[13] In our study, we found faster recovery of fever (infection) in study group using honey as compared to control group without honey within 5 days of treatment (Table 3).

According to Al-Waili and Boni honey ingestion has anti-inflammatory effect.^[17] Honey is said to reduce the activity of cyclooxygenase-1 and cyclo oxygenase-2, thus showing anti-inflammatory effect.^[18] There is less edema, better wound epithelization and tissue regeneration with honey.^[17] In our study, we found faster recovery from oropharyngeal congestion in study group using honey (Table 3). Honey reduces prostaglandin E2 and alpha 2 in blood leading to pain relief.^[19] In our study, we found better relief and greater patient satisfaction in study group using honey (Table 4). The satisfactory results were achieved faster in the study group as compared to control group, and there was faster recovery using honey (Table 2).

The side effects of honey are rare. It can cause stinging pain due to acidic pH.^[20] No permanent resistance to honey has been noted.^[21] In our study, no side effects of honey were noted.

There is scope of further studies regarding honey in other infective disorders. There is also scope of study also including children and seeing the affect of honey on them which could be a limitation of our study. There are various subtypes of honey available and comparative studies on each of them could be done in future.

CONCLUSION

Honey is an easily available household product which has anti-inflammatory, anti-infective and antioxidant properties in the treatment of sore throat. Honey leads to faster recovery of signs and symptoms of sore throat. Patient satisfaction is much higher when honey is added to the treatment. The signs and symptoms of pain, fever, and oropharyngeal congestion recover much faster when honey is added to the therapy. There are no side effects or resistance on intake of honey and is considered as a safe remedy. Hence, we can conclude that intake of honey as adjuvant therapy would benefit patients with sore throat.

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