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# Effects of Ginger on the Improvement of Asthma [The Evaluation of Its' Treatmental Effects]

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**Abstract:** High prevalence of asthma require more attention and effective therapies since the current therapeutic approaches have high side effects nowadays new therapies like homeopathy and herbal drugs are more delighted. The study was performed on 92 patients with pure Asthma. The patients were similar concerning the age, wheezing, weekly use of spray and the drug weed. At the beginning, spirometry was done for all the patients. Then of the 1-month the patients were divided into two groups. The first group was given ginger (150 mg) every 8 hours whereas the second group received placebo. After 2 months the patients were tested for spirometry and changes on FEV1, FVC, FEF25-75, stage and clinical symptoms. In the patients (test) group which received ginger with their drugs, 19.5% showed wheezing relief and 52% showed chest tightness relief. Dyspnea was not completely disappeared in the patients. In 8.7% of the patients' higher stage to lower stage change was observed. Also the mean nocturnal coughs (3.87 to 2.6 times), the mean spray usage (6.34 to 5.04 times weekly) and the mean dyspneic attacks (3.41 to 2.41 weekly) showed clear reduction ($P<0.05$). After treatment the test and control groups were analyzed. Dyspnea was 80.4% in test group and 95.6% in control group, wheezing was 78.3% in test group and 100% in control group and chest tightness was 26.1% in test group an 89.1% in control group ($P<0.05$). Concerning the stage them was no clear difference between the two groups ($p$ N.S.). After treatment, the coughing attacks in the control group was 3.21 / week and in the test group was 2.61 / week. Also the mean dyspneic attach 100 the control group was 1.89 / week and in the test group was 1.32 / week ($P<0.05$). The mean FEV1, FVC and FEF25-75 in the test and control groups were not meaningful statistically (p N.S.). Therefore although the ginger dose and in out study was ½ it's the therapeutic dose (1-4 gr) the ginger showed effective in reducing the asthmatic symptoms but not effective in changing the stage of the disease and spirometry findings.

**Key words:** Asthma, ginger, cough, spirometry

## Introduction

Asthma is a common disease around the world, nearly 7.2% (100 million person) have the disease. (Schafer, 1997). Approximately 3-4% of the united stage population are affected (Fadden *et al*., 2001). In ISSAC project the prevalence of the disease was estimated to be 15% in Iran (Peat et al., 1994). 30 years studies in western counties showed an increase in morbidity and mortality of the asthma (Sunger *et al*., 1997; Drazen, 1997). Clearly the high prevalence of the disease require high economic bounder concerning follow up and treatment of the patients annually (about 4 million dollars annually). Finally asthma is responsible for 40000 deaths annually around the world (Virant and Shapiro, 1994). Common treatments and are those that contain B agonistics, methyl gazanthin, anticholinergic, glucoconticoids, and drugs that stabilize mast cells. Each of these drugs have important side effects and cross activity (especially methyl gazanthins) (Fadden *et al*., 2001; Sandfor, 1997). Therefore nowadays great affection is devoted to relaxation (Dovlo and Annew, 1997), Homeopathy (Grant and lutz, 2000) and herbal treatments. Ginger is one of the hellos that is approved by FDA as food complements and is and as drugs for asthma (Chang *et al*., 1995) it is placed in FDA list of herbal drugs WHO (Penelope, 2000) its only contraindication is concerning bile stone formation (Bradley, 1990). The Gigerol analogs through increasing heart output are beneficial for asthmatic patients, (Roufog and Basil, 2000). The ginger juice of products effectively suppress hypersensitivity. Hypersensitivity is a kind of changed reaction that the body produce in response to allergen. This hypersensitivity response produced in response to exegenic or endogenic allergens (Weidner and Morten, 2001). Ginger also effective in reducing to reflux. Since is a seen that the baby foods that contain ginger, reduce the gasteroesophagical refluxes (GERD). Since in more than 75% of the asthmatic patients. GERD is reported, through this mechanism the ginger effectively reduce the

asthmatic symptoms (Hebert, 2000; Theuer and Richard, 1998).

## Materials and Methods

This study was conducted by clinical trial planning with simple sampling. To analyze the therapeutic benefit of ginger on pure asthma 92 patients with pure asthma whom were under therapy for at least one year were chosen. Spirometry was done for the patients and was interpreted according to ATS criteria. After one month the patients were divided randomly into 2 groups and were given either ginger or placebo. Then after 2 months they were evaluated again. Ninety-two patients with asthmatic symptoms that were under treatments for at least one year were selected and spirometry was performed for them. The spirometric device was schiller version 1.5 predict 1998 crapo ATS.

The patients were grouped as follows:

- low 80-100 FEV1
- low to medium 70-79 FEV1
- Medium 60-69 FFv1
- Medium to high 50-59 FFV!
- High 35-49 FFV1
- Very high <35 FFV1

Then the study patients divided into two groups; one group received placebo the second group received ginger. The ginger was prepared as follow : First the rhizomes of the plant were grinded, after sewing and controlling the pharmacological tests, they were autoclave and pounded into percolator. Then using 10% alcohol the powder was mike. After these 150 gr. of the powder was mimed in 1 liter of the dilution. Each ml of the preparation or 25 drops of it contained 150 mg rhizome. The drug dose was 20 drops each 8 hours. After 2 months spirometry was performed again. Patients with pure asthma in this study were those who had asthma for at least one year and were under treatments patients who had not these criteria were rejected. Before and after treatment dat consisting of clinical symptoms, the rates of nocturnal coughs and attacks asthmatic as well as the dosages of the drugs and spirometici data were collocated. The study was done in hemodialysis section of Hajar Medical educational and Therapeutic Center of Shahrekord University of Medical Sciences in Shahrekord of Iran. Results are expressed as the mean±SD. Comparison between the groups was done using chi square test.

## Results

After treatment with Ginger in 37 persons (80.4%) of the test group while 44 persons (95.6%) in control group had dyspnea ($P<0.05$) also after using the drug in 36 persons (78.3%) of the test group and 46 person (100%) in control group had wheezing ($P<0.05$) Moreover, In 12 persons of test group (26.1%) and 41 persons (89.1%) in control groups there were chest tightness ($P<0.05$). After treatment the stage of the disease was changed as follow: in test group 39 persons (84.8%) were in stage 4 (seven persistent), 6 persons (13%) in stage 3 (Moderate persistent) and 1 person (2.2% 1 in stage 2(Mild persistent), while in control groups 36 persons (73.9%) in stage 4, 12 persons (26.1%) in stage 3 and them was no patient in stage 2 (*p* N.S.). The mean nocturnal cough in control group, after treatment, was 3.21 times per week while in test group it was 2/61 times per week which was significant ($P<0.019$).The mean of spray dosage per week was 5.82 times a week in control and 5.04 times a week in test group after treatment, which was significant ($P<0.05$).The mean of Dyspnea attacks after treatment was 1.89 times/ week in control group and 1.33 times / week in test group which was significant statistically ($P<0.05$). The mean FEF25-75 after using ginger in test group was 74.58 and in control group after receiving placebo was 49.04 which was not significant (*p* N.S.). The mean of FEV1 after receiving ginger in test group was 47.31 and in control group after taking placebo was 45.1 which was not significant (*p* N.S.). The mean of FVC in test group after receiving ginger was 46.69 and in control group after taking placebo was 43.8 which was not significant (*p* N.S.).

The results of groups which took Ginger :

- in the test and control groups Dyspnea was a like
- in the test group 35 persons (76%) had wheezing before and after treatment. 9 persons (19.5%) after treatment get imported and showed no wheezing. 1 person (2.1 %) after treatment showed wheezing and 1 person (2.1%) before and after treatment had no wheezing which according to this statistical calculation it is significant ($P<0.05$)
- in the test group chest tightness appeared in 10 persons (21%) before and after treatment. In 24 persons (52%) after treatment chest tightness disappeared. In 2 persons (4.3%) after treatment chest tightness appeared and in 10 persons (21.7%) before and after treatment chest tightness did not exist at all. Therefore chest tightness before and after treatment showed significant different statistically ($P<0.05$). In the test group 39 persons (84.8%) before and after treatment were in stage 4, 3 persons (6.5%) after treatment get improved from stage 4 to stage 3. 1 person (2.2%) get improved from stage 3 to stage 2. 3 persons leafed and after treatment were in stage 3. These results were not significant (*p* N.S.). Mean nocturnal coughing in the test group before treatment was 3.87 times per week, which get improved to 2-6 times per week after treatment ($P<0.05$). Mean usage times of spray was 6.34 times per week in test group, which after

treatment get improved to 5.04 times per week ($P<0.05$). The mean chest tightness per week in the test group before treatment was 3.41 times a week which after treatment it improved to 2.41 times a week ($P<0.05$).Results of the group taking placebo :

- The frequency of dyspnea before and after treatment in the control group was the same (*p* N.S.). The frequency of chest tightness in the control group shown to be as follow : 37 persons (80.4%) before treatments had chest tightness, in 3 persons (6.5%) after treatment the sense of chest tightness disappeared, while in 4 persons (8.7%) chest tightness accounted after taking placebo. Finally the chest tightness before and after treatment did not show significant difference (*p* N.S.). In the control group 33 persons (71.7%) were in stage 4 before and after treatment. 1 person (2.2%) improved from stage 4 to stage 3 after treatment, and 1 person (2.2%) changed from stage 3 to stage 4 after treatment. These changes were not significant statistically (*p* N.S.). The mean nocturnal coughing in the control group before treatment was 3.47 times per week, while after taking placebo reached 3.21 times per week ($P<0.05$) group before treatment was 6.23 times per week reached after treatment reached 5.82 times per week (*p* N.S.). The mean dyspnea attacks in the control group before treatment was 4.1 times per week which after treatment reached 3.34 times per week ($P<0.05$).

## Discussion

Ginger is the root of the plant zingier officinal which is used commonly prey therapeutic characteristics have been described for the plant with little true attention. Because of the many therapeutic characteristics and low side effects, and also become of the humanity concerns, in this study Ginger was used as 150 mg per 8 hours for the patients and not as 1-4 gr daily as is used standard, yet many exceptional results obtained. Since no pervious study concerning the effects of ginger on patients control and changing the spirometric criteria has been found, the results of this study will discussed also. First the data of the both groups before treatment were analyzed and there was no significant difference between the two groups. Concerning the obtained results, dyspnea before and after treatment showed no significant difference. While dyspnea is a kind of sense and the patient will just describe its presence or absence, it may be that the degree of dyspnea got lesser after taking ginger. Wheezing was disappeared in 19.5% of the patients who used ginger which is significant. Since wheezing is an objective hence findings 50 it 15 valuable.

Chest tightness was disappeared in 52% of the patients who and ginger which is significant.

Concerning the mean FEF25-75, FEV1 and FVC between the test and the control groups, them was no significant difference. it may be that to determine the spirometry findings before and after using ginger amount is need and 2 months was not enough.

There are only few data on the actions of ginger. Gingerols, in particular 6 - gingerol, have been identified as the active ingredient of ginger, and are also responsible for its characteristic taste. There are several mechanisms which could explain the possible antiemetic effects of ginger. In an animal model, for instance, it was demonstrated that 6- gingerol enhanced gastrointestinal transport (Yamahara *et al*., 1990)

This and other compounds of ginger have also been shown to have anti- hydroxytryptamine activity in isolated guineapigileum (Yamahara *et al*., 1989; Huang *et al.,* 1991) Galanolactone, another constituent of ginger, is a competitive antagonist at ileal 5-HT3 receptors (Phillips *et al*., 1993).

Thus antiemesis could be brought out by effects on the gastric system through 5-HT3 antagonism. This hypothesis is weakened by the results of a randomized, placebo-controlled, crossover study in human volunteers reporting that oral ingestion of powdered ginger root did not affect gastric emptying rate (Holtmann *et al*., 1989). In contrast, effects on the central nervous system may be involved. This notion is strengthened by the finding that, in an animal model, oral 6-gingerol prevented vomiting in response to cyclophosphamide. A central effect is also implicated by studies reporting that ginger partly prevents motion sickness symptoms in healthy human volunteers. Another study investigating motion sickness, however, reported no effects of ginger on the vestibular and oculomotor system. With a herb commonly used as a foodstuff and spice, one is inclined to assume that it is free of serious adverse effects. However, this can be a dangerous fallacy. For instance in doses taken with food, a spice may be safe, yet when taken in higher doses as a drug, this might not apply. There were no reports of adverse reactions to ginger compared with placebo in any of the above studies. The British Herbal compendium documents no adverse effects of ginger (Bradley, 1990).

The identification of medicinal herbs such as garlic, ginger and nutmeg provides an opportunity to investigate west Indian plants used to treat asthma to determine whether they possess pharmacological properties. scientific investigations have shown that some of these herbs possess pharmacological and anti inflammatory properties, and these may be useful in suppressing the characteristic exaggerated immune response in asthma (Ernst *et al*., 1998; Garcia *et al*., 1999; Yuri *et al*., 2005). Therefore since using Ginger has no important side effects, we commend that it is used as a standard

(Schafer, 1997; Mc Fadden *et al.*, 2001; Peat *et al.,* 1994; Sunger *et al.,* 1997) dosage in the future studies. Also to determine the dyspnea in a quantification meaner, to determine the effects of ginger on other parts of the body and to determine the stages of the disease separately.

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