

## Study on the effect of ginger tincture on acute pharyngeal angina

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Received: 15 August 2013; Accepted: 14 November 2013

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### Abstract

This paper has proposed by the addressed theme to obtain ginger tincture to subdue acute pharyngeal angina, a diagnosis popularly known as the sore throat. The etiology of acute angina is varied. Viruses and bacteria can cause infections that cause redness and stinging pain in the throat. Other causes include irritants such as cigarette smoke, air pollution, alcohol, and allergens, including: poplar fluff, pollen, house dust etc. Throat pain often occurs during a cold, often with typical symptoms that are more or less pronounced. The infection is caused by viruses that attack the body's defence system. Mucus produced by the mucous membranes in the nose and throat is the body's first line of defence. Particles that we inhale, such as dust, pollen, viruses and bacteria are retained by this mucosa. Once a virus gets through this mucosa and enters a cell, it multiplies and thus brings about new viruses that invade surrounding cells. The result of the body's immune response to viral invasion is actually represented by the symptoms of the cold. Alarm signals are sent to specialized white blood cells by the infected cells. They soon arrive at the site of infection and remove a number of chemicals such as kinins.

Thus, the symptoms of colds are caused by these substances by increasing mucus production, by cell membrane rupture and loss of fluid from blood capillaries and lymphatic vessels. The cold symptoms include: pain when swallowing; painful scratching or burning sensation in the throat, hoarseness and pain during speech, dryness in the throat and the pharyngeal area, swelling and inflammation of the mucous membranes. For the experiments we used commercially available ginger rhizomes.

**Keywords:** ginger, tincture, acute pharyngeal angina

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### 1. Introduction

Nowadays more and more people resort to natural treatments, to courses of treatment with teas or herbal products, while the cultivation of medicinal plants can be a good business opportunity. Demand is increasing, both on the domestic and international market [9].

The production and marketing activities of plants that have a therapeutic effect has become a major economic activity, as a source of income for producers, traders, and for various processors [1].

Ginger rhizomes that had been commercially acquired were used for the experiments.



Image 1. Ginger rhizomes

## 2. Materials and Method

The flow of obtaining ginger tincture is as follows:

The reception of the raw material is received in batches, depending on origin and quality, based on an analysis report [5]. The quality reception is done by checking the following parameters: plant authenticity; moisture; content of organic and mineral foreign bodies; impurities content.

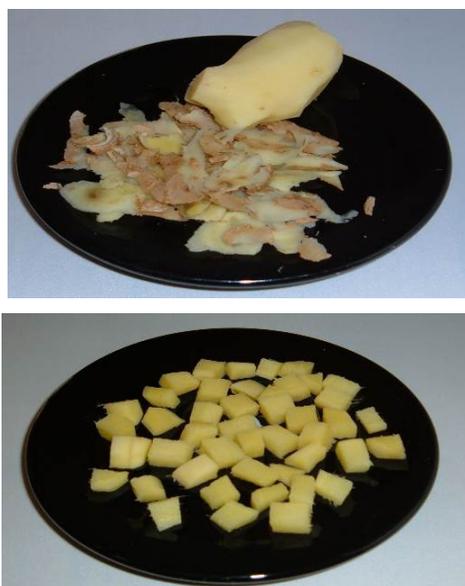


Image 2. Peeled ginger and divided ginger

Weighing the plant product (plant parts) is done accurately using an analytical scale.

Peeling the ginger rhizome is one of the important factors in achieving extractive solutions.

Shredding the plant product, by increasing the contact surface between the plant product and solvent, decreases the extraction time and also increases the efficiency of the extraction. The degree of shredding of the plant products is determined according to the extraction procedure that was used.

The extraction of the bioactive compounds. The ginger tincture was obtained from 20 grams of rhizomes, and, as an extraction solvent, we used ethanol 60% in a quantity of 250 ml [2-4].

After 15 days we filtered the resulting solution to remove substances in suspension (rough mechanical impurities, compounds in a precipitated form).

## 3. Results and Discussion

We studied 4 subjects who had a sore throat due to common colds, without having previously administered medical treatment [6,7].

Subjects were asked to assess the pain they felt in the pharynx, according to the universal scale for pain classification [8].

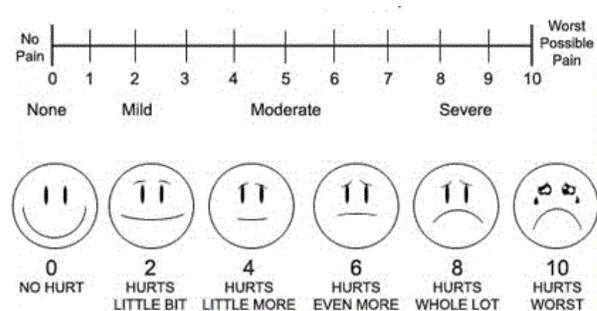


Image 3. The universal pain classification scale [10]

All persons under investigation classified pain as being moderate pain, with scores between 3 and 5, as shown in the following table.

Subjects 1 and 2 were given ginger tincture, 5 ml of tincture diluted in 100 ml of water, 30 minutes before meals, 3 times a day.

Subjects 3 and 4 were given a Strepsils tablet, 3 times a day, 30 minutes before meals. Following the administration of hydro-alcoholic ginger extract, subjects 1 and 2 indicated that the throat pain decreased after the first administration, disappearing completely after 2 days.

In the case of subjects 3 and 4, pain decreased after having taken the Strepsils tablet, but reappeared in about 1 to 2 hours. The pain disappeared completely after 4 days in the case of subject 3 and 4 days for subject 4.

**Table 1.** The significance of pain score

Patient's welfare	0 = Lack of pain
Minor pain that does not interfere with other activities. Possibility of adapting to pain through autosuggestion or light medication	1 = Mild pain, barely noticeable
	2 = Mild pain, similar to pinching
	3 = Pain felt as an injection or a slight cut in the finger
Intense pain that affects daily activities, the patient remaining independent. There is no adjustment to pain	4 = Sharp pain like a bee sting or hitting the hallux (the big toe) with a blunt object
	5 = Sharp pain like forcing a sprained ankle or a moderate back pain, permanently felt, that affects the lifestyle
	6 = Sharp, stinging pain, affecting at a psycho-social level, similar to a bee sting combined with severe back pain, the person not being able to think clearly or to interact with peers
Severe pain. The patient can not engage in normal activities and cannot operate independently	7 = Sharp, stinging pain, affecting at a psycho-social level, dominating the senses, the patient not being able to think clearly, another person's assistance being necessary. Can be compared with a moderate migraine.
	8 = Pain so intense that the affected person cannot think clearly at all, if the pain persists for a long time, there can be a change in personality. Suicide attempts are common, being comparable to pain during giving birth or severe migraine
	9 = Pain so severe that it requires strong painkillers, regardless of possible side effects. Suicide attempts are frequent in this stage. It is similar to laryngeal cancer.
	10 = Very severe pain. Unconsciousness occurs. Similar to crushing a member.

**Table 2.** Pain evaluation at investigated subjects, before treatment

Pain scale \ Subjects	Subject 1	Subject 2	Subject 3	Subject 4
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

After having performed the experiments, we observed the beneficial role of the ginger tincture in combating acute pharyngeal angina, being considered an antibiotic, anti-inflammatory and a natural analgesic. The results were even more convincing as the pain gave way in two days,

compared to 4-5 days in the case of subjects that were treated with Strepsils medicine.

It should however be noted that subject 4 classified the sore throat as a 5, which is due to higher gravity than the other 3 subjects or just the patient's increased sensitivity to pain.

For an accurate estimate we recommend the continuation of the experiment on a larger batch of subjects. Subjects with severe throat angina of different aetiologies, such as bacterial, viral, allergic or irritant, should also be evaluated.

We recommend:

- testing, in the microbiology laboratory, the antibiotic effect of ginger tincture, using antibiograms;
- the analysis, by the HPLC technique or by mass spectrometry, of the chemical composition of ginger tincture, to determine precisely the substance with curative effects of this solution.

**Compliance with Ethics Requirements:**

Authors declare that they respect the journal's ethics requirements. Authors declare that they have no conflict of interest and all procedures involving human and/or animal subjects (if exists) respect the specific regulations and standards.

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