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# Effect of Cinnamon Gargel on Healing of Aphthous

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## Abstract

This study aimed to show the impact of cinnamon mouth gargle on Aphthous ulcer and there role on recovery process of this ulcer.

This take a look at became carried-out on one hundred sufferers affected by Aphthous ulcer that typically visitor clinics.

The sufferers have been divided into groups, Cinnamon dealt with institution: Their wide variety 50 affected person, the aphthus ulcer dealt with Cinnamon gurgle wash 3-instances every day and Placebo dealt with institution. The affected person wide variety became 50 affected person suffered from aphthus ulcer and dealt with placebo 3-instances every day.

Prior to the take a look at, all assigned clinicians from the exclusive medical facilities have been skilled with the aid of using the most important examiner for the same old working way that covered the measurement of ulcers, undertaking the visible analog scale (VAS),and record it.

This study concluded that, the maximum of the sufferers that suffered from Aphthous ulcer typically arise at (30– 40) day of age. Also, the occurrence of Aphthous ulcer decreased in the institution dealt with with Cinnamon also, the ache of Aphthus ulcer decreased with Cinnamon mouth gurgle wash.

**Keywords:** Cinnamon, Gargel, Healing, Aphthous, Ulcer, Oral.

## Introduction

With the converting traits and life-style the techniques of oral hygiene status have affected. industrial merchandise of oral health, crafted from artificial products, are favored over herbal re-assets and are being usually used, possibly due to clean availability and on the spot results. But those cleaning and whitening merchandise like toothpaste and mouthwash are being drastically criticized due to their unfavourable results on enamel, gum, mucous membrane. (1).

for long period many beneficial component that recognized and made from flowers ,may be introduced

as protecting material (anti mutagen) to the goods of oral health to keep away from its terrible results on human health. As herbal merchandise, the crucial oils were suggested owning good applications (2).

Aphthous stomatitis with recurrent painful aphthous ulcers at the non-keratinized oral mucous membranes. (3,4).

Chronic recurrent ulcers have 3 type of medical morphology and with distinct time courses. Less than 1 cm minor-type (normally 2–five mm) and then cure without treatment in 4–14 days. These are forming 80– 90% from all type of recurrent ulcers (5).

Scarring takes place in round 8% of cases of ulcers (6). Major ulcers are normally 1–three cm, deep indurated and may remaining from 10 days- six weeks on occasion longer (7). They are 10% of recurrent ulcers of oral area. About 64% of these ulcers heal with scarring. Herpetiform aphthous oral ulcers are 1 to 2 mm in

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diameter<sup>(8)</sup>. They account for round five% of recurrent oral aphthous ulcers, are extraordinarily painful, remain for seven to ten days. Herpiform aphthous appears one hundred ulcers; there will aggregate forming large erosive area, approximately 32% scar forming.<sup>(9)</sup>

The efficiency of the oil of cinnamon in DNA molecule was examined and the result then summarized.. It changed into located that plant extracts blanketed the DNA from the mutagenic impact of mouth wash and the DNA bands remained intact and have been much like the band of DNA of control. The wells of gel are sparkling due to the presence of crucial oils of remedy because the DNA changed into loaded without delay after remedy to keep away from any impact of purifying answers on DNA structure.

**Jayaprakasha et al.**<sup>(1)</sup> located anti mutagenic pastime of water extract of cinnamon. Also, Hamssa et al.<sup>(10)</sup> located black peppers and bell pepper having anti-mutagenic effects. They in addition said that each are succesful of inhibiting carcinogen activation, enhancing the cleansing of carcinogens through scavenging the reactive dealers that harm DNA.

**Jayaprakasha et al.**<sup>(1)</sup> indicated that under-applied and unconventional a part of cinnamon is a great supply of antioxidant and antimutagenic phenolics.

U.S. Department of Agriculture provide that a teaspoon of cinnamon weighing 2.6 g have 6.42 calories of energy; 2.1 g of carbohydrates, 26.1 milligrams (mg) of calcium, 0.21 mg of iron, magnesium:1.fifty six mg, phosphorus: 1.sixty six mg, 11.2 mg of potassium and vitamin A: 0.39micrograms, It additionally includes strains of nutrients beta-carotene,alpha-carotene, lycopene, the antioxidants choline, lutein, zeaxanthin and beta-cryptoxanthin, ,.

Oxidative stress may be decreased by Antioxidants and can decrease the occurrence of cancer, kind 2 diabetes, and plenty of different status. People usually used cinnamon in small amount in food. Therefore, the vitamins it includes will be benefit inside the diet.<sup>(11)</sup>

The extract of *Cinnamomumzeylanicum* includes antioxidant products with the action of hydroxyl radicals and anions from scavenging superoxide.<sup>(12)</sup> Inhibiting factor of zeylanicum crucial oil and oxidation factor

merchandise formation in mustard oil on the awareness of 0.02%<sup>(11)</sup>.

Borneolum is acrysal steam distilled product of *Cinnamomum camphora*<sup>(13)</sup>. It is for external use in ulceration and sore mouth<sup>(14)</sup> and confirmed anti-inflammatory and antioxidant molecular protecting results through reducing inflammatory factor iNOS expression, and NO, release, in addition to NF-κB translocation and associated apoptosis in an ischemic/reperfusion neuron model<sup>(15)</sup>. *Gallachinensis* in TCM concept astringes, promotes wound recuperation and is used for ulcers and edema<sup>(16)</sup>.

This study aimed to examine the impact of cenimon mouth gargle on Aphtous ulcer and there results on recuperation process of this ulcer.

## Patient and methods

### 1-Patients:

Patients came to privet clinic how an aphtus ulcers have.

### 2-Cinnamoon gurgle preparation:

The cinnamon spice had been used as a powder mixed with water in appropriate ratio as in hot drink of cinnamon and use as mouthwash treatments.

### 3-Grouping and statistical design:

Both test and placebo gurgle wash (1:1 allocation ratio) had been randomized the usage of a computer-primarily based totally random variety generator and allotted to the centers.

### 4-The patients had been categorized into:

1-Cinnamon handled organization: Their variety 50, the aphtus ulcer handled with Cinnamon gurgle wash 3-instances daily.

2-Placebo handled organization: The affected person variety changed into 50 affected person suffered from aphtus ulcer and handled with placebo 3-instances daily.

### 5- Study Intervention

The ulcer length and ache level had been examine ,

measured and documented on the clinics on 1<sup>st</sup>, 3, and five day via way of means of assigned unbiased scientific investigators. in addition to pulse, body temperature and blood pressure, had been taken in all visits. When the ulcer heal in the five-day examine period, the cinnamon and/or placebo agent changed into gathered. measured the ulcers dimation, carrying out the visible analog scale (VAS)..

**6. Clinical notes:**

These parking ulcers, as defined as advanced inside seventy two hrs of onset and actually seen then documented. The assessment of the floor place of the ulcer ,changed appear in cm and mm via way of means of a dental probe (Shanghai,Dental Instrument Factory- China).ulcer diameter usually measured and documented. Pain depth changed into measured the usage of a VAS, in which the amountof ache ranged 0 (no ache) to 10 (insufferable ache). Pain changed into assessed via way of means of annoying the ulcer with the periodontal probe. The values had been gathered via way of means of the assigned investigators.

**7-Statistical evaluation:**

Statistical evaluation changed into made the usage of SPSSPC + Computer program - Version 25, via the usage of t-check for evaluating among the 2 businesses (Cinnamon handled organization and Placebo handled organization) in ulcer sized development. Also, Chi<sup>2</sup>-check for evaluating the% of development of in Ulcer length and ulcer ache some of the businesses below the examine.

**Results**

**The baseline demography data of the patients.**

Our results observed in Table (1) on the characters of the patients cleared that, the age, of the patients that suffered from Aphtous ulcer not differ significantly among the patients under the studied groups (P > 0.05), the experimental group its age level reached to (32.34 year) and in placebo treated group it reached to (33.17 year).

The results cleared that, the incidences of Aphtous ulcer in experimental group 11 (22 %) lower than its incidences in the placebo treated group in male patients 16 (32 %), while, in female patients in experimental group its incidences reached to 45 (90 %) and in placebo treated group it reached to 35 (70 %).

Also the duration of the previous ulcer not differ significantly among experimental and placebo treated groups as its duration reached to 12 and 11.42 day for Aphtous ulcer in experimental and placebo treated group.

The results cleared that, the experimental group that treated with Cinnamon gurgle wash its average ulcer size reached to 4.51 mm<sup>2</sup> while, in placebo treated group its size reached to 5.14 mm<sup>2</sup>.

The results observed in Table (1) cleared that the ulcer pain (VAS) in Cinnamon treated group is lower than its level in the placebo treated group.

**Table (1): distribution data of the patients.**

	<b>cinnamon group (n =50)</b>	<b>Placebo group (n =50)</b>	<b>P</b>
(Age per year) (mean ± SD)*	32.34 ± 10.12	33.17 ± 11.9	0.77
Gender**			
Male,	11 (22%)	16 (32%)	0.016
Female,	45 (90 %□)	35 (70%)	
Duration of previous ulcer (day)*	12 ± 3.96	11.42 ± 4.16	0.95

**Cont... Table (1): distribution data of the patients.**

Size of ulcer(mm2) (mean $\pm$ SD)*	4.51 $\pm$ 3.12	5.14 $\pm$ 4.15	0.18
Pain of ulcer (VAS)***			Chi2= 0.16
0	3	1	
1	5	2	
2	6	6	
3	13	9	
4	11	6	
5	7	13	
6	3	8	
7	3	4	
8	2	3	
9	1	2	
10	1	1	

VAS: visual analog scale.

\*\*\*= t-test for comparison between the gender groups.

**Our results on the improvement of the ulcer size among patients treated with Cinnamon gargle wash and placebo wash:**

The results observed in Table (2), cleared that, the experimental group that treated with Cinnamon mouth gargle have lower size of ulcer than the placebo treated group as its size reached to 3.2 mm<sup>2</sup> in cinnamon treated group, and reached to 4.3 mm<sup>2</sup> in placebo treated group at 3 days of treatment, while, at 5-days post-treatment its size reached to 2.1 for Cinnamon treated group and 3.7 mm<sup>2</sup> in placebo mouth wash treated group, respectively.

Also, the improvement % at 3 and 5-days post treatment improved in Cinnamon using group than the placebo group for improvement % in Cinnamon at day 3 was 14 (28 %) and in placebo treated group it was 9 (18 %). While, at 5-day post-treatment the improvement % reached to 35 (70 %) in Cinnamon treated group, while, in placebo treated group it reached to 28 (56 %).

The effective indices for significant improvement cleared that the Cinnamon is more efficient in treatment of Aphthous ulcer than the placebo treatment at 3 and 5 days of experiment. While, the non-significant improvement showed a higher results in placebo than the Cinnamon treatment of Aphthous ulcers.

**Table (2): NO. of person in cinnamon and placebo groups on day 3 and day 5 depending on diameter of ulcer.**

Parameters	3-Day		P	5-Day		P
	Experimental group (%)	Placebo group (%)		Experimental group (%)	Placebo group (%)	
Number	50	50		50	50	
Size (mean ± SD)	3.2 ± 2.1	4.3 ± 1.52	0.01*	2.1 ± 1.50	3.7 ± 2.0	<0.01**
Significant improvement	14 (28 %)	9 (18 %)	0.03***	35 (70 %)	28 (56 %)	0.01****
EI size = 100%	5 (10 %)	3 (6 %)		18 (36 %)	24 (21.1)	
EI size = 70–100%	10 (20 %)	6 (12 %)		20 (40 %)	33 (28.9)	
Nonsignificant improvement	35 (70)	45 (90 %)		12 (24 %)	57 (50.0)	
EI size = 30–70%	20 (40 %)	19 (38 %)		8 (16 %)	21 (18.4)	
EI size = 0–30%	30 (60 %)	26 (52 %)		11 (22 %)	36 (31.6)	

\*and \*\*: *P* values the differences of ulcer size on groups in 3 and 5 days. between groups on days 3 and 5.

\*\*\*and \*\*\*\*: *P* values indicate the comparisons of significant improvement and non-significant improvement at 3 and 5 days.

EI = Effective indices

**Our results on the improvement of the ulcer pain among patients treated with Cinnamon gurgle wash and placebo wash:**

The VAS was used to measure the level of pain for both groups. The results observed in Table (3), cleared that, the improvement % of pain at 3 and 5 days post treatment improved in Cinnamon group than the placebo treated group as the improvement % in Cinnamon at day 3 was 14 (28 %) and in placebo treated group it was 9 (18 %). While, at 5-day post-treatment the pain

improvement % reached to 36 (72.00 %) in Cinnamon treated group, while, in placebo treated group it reached to 29 (58.0 %).

The effective pain indices for significant improvement cleared that the Cinnamon is more efficient in treatment of Aphthous ulcer than the placebo in reducing the pain at 3 and 5 days of experiment.

While, the non-significant improvement showed a higher results in placebo than the Cinnamon treatment of Aphthous ulcers.

**Table (3): NO. of patients in cinnamon and experimental groups on day 3 and day 5 according to severity of pain.**

	3-Day		P	5-Day		P
	Cinnamon group (%)	Placebo group (%)		Cinnamon group (%)	Placebo group (%)	
Number	50	50		50	50	
Significant improvement	14 (28 %)	9 (18 %)	>0.05*	36 (72 %)	29 (58 %)	<0.05**
EI pain = 100%	8 (16 %)	3 (6 %)		24 (48 %)	22 (44 %)	
EI pain = 70–100%	8 (16 %)	6 (12 %)		13 (26 %)	7 (14)	
Nonsignificant improvement	42 (84 %)	48 (96 %)		19 (38 %)	27 (54 %)	
EI pain = 30–70%	17 (34 %)	21 (42 %)		12 (24 %)	16 (32 %)	
EI pain = 0–30%	25 (50 %)	27 (54 %)		7 (14 %)	11 (22 %)	

\*and \*\*: *P* values represent the comparisons of ulcer pain between groups on days 3 and 5, respectively.

\*\*\*and \*\*\*\*: *P* values represent the comparisons of significant improvement and nonsignificant improvement on days 3 and 5, respectively.

EI = Effective indices

## Discussion

25% is the percentage of the prevalence of Recurrent aphthous stomatitis (RAS) (17), which occur on oral mucosa which is non keratinized. There are 3 main type of oral ulcers major, minor also, herpetiform (18). 80–85% of RAS, with 3–10mm ulcers usually painful and appears on groups greater than 5 lesions heal between 10 days to two week (18).there are no specific treatments for RAS depending on the etiology ,but we must work to decrease the pain and the duration of ulcers by prevent the secondary infection and suppress the local immune factors (17).

**Our results on this study:** cleared that, the most of the patients that suffered from Aphthous ulcer commonly occur at (30 – 40) day of age and in female higher than

male.

This results attributed Recurrent Aphthous ulcers (RAS) is common manifestation that related to group of health problems with multiple causes (19). The development of ulcers depending on the local Immune factors, which was supported by the histological infiltration of plasma cells, lymphocytes, and neutrophils of oral mucosa (20). There are many types of cytokines played a role on the pathogenicity of ulcers (21),in RAS lesions the IL-10 concentration decreased, while IL-2, IFN- $\gamma$ , and TNF- $\alpha$  were elevated (22,23).

The results cleared that, the incidences of Aphthous ulcer reduced in the group treated with Cinnamon.

The present of ulcers in recurrent aphthous stomatitis

patients were usually exposed to huge number of microorganisms, then lead to inflammatory reaction. The healing of ulcers depends on the protection against microbes. Although the antimicrobial activity of Cinnamon on inflammatory disease was denied by Li et al. because there is no reported effects on *E. coli* growth (24).

This results agreed with those of (1,25) where they reported that, cinnamon water extract have anti mutagenic activity and it preserve the health condition of the cells and help in regeneration of the cells and treat the ulcer with reduction of its size.

Also the pain reduced in the group treated with Cinnamone, this results attributed to with the healing of many ulcers, the pain of ulcers will be disappeared. The activity of Cinnamon gargle wash on pain, explain in this study on day 5, may be due to healing of ulcers, and not belong to the analgesic effect of cinnamon.

This results agreed with those of (18) where they reported that by using some herbs as Cinnamon can treat the unclear etiology of the ulcer, by decrease the pain and the duration of ulcers via prevent the secondary infection and suppress the local immune factors.

The active effect of cinnamon mouth wash in treatment of aphthous ulcer attributed to the Cinnamon contain Cinnamaldehyde (CM) which is the active component of the spice cinnamon (*Cinnamomum zeylanicum*). It had anti-microbial, anti-inflammatory, anti-tumor, anti-oxidant, cholesterol lowering and immunomodulatory properties (26). Cinnamon consider as anti-inflammatory such as in gastric inflammation by decrease the activation of NF- $\kappa$ B (27). Cinnamon effects on regulatory T-cells which lead to decrease allergic encephalomyelitis in vivo (28). Cinnamon consider as anti\_rheumatic agent due to their action on reduce the inflammation in arthritis in vivo by decrease the effect of cytokines such as interferon  $\gamma$  (IFN $\gamma$ ) and, IL-2, IL-4, (29). Cinnamon is effective in the treatment of degenerative disease of neurological origins as in AD (30, 31).

Our results concluded that, the most of the patients that suffered from Aphthous ulcer commonly occur at (30 – 40) day of age. Also, the incidences of Aphthous ulcer reduced in the group treated with Cinnamon also,

the pain of aphthous ulcer reduced with Cinnamon mouth gargle wash.

**Ethical Clearance:** The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

**Conflict of Interest:** The authors declare that they have no conflict of interest.

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