

# *In-vitro* Trial of *Salvia officinalis* Water-extract on Buccal-cavity-bacteria and Individual's-health-outcome at Highland

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Received date: January 01, 2021; Accepted date: January 22, 2021; Published date: February 02, 2021

Citation: Sherifa M. M. Sabra, F. A. Al-Salmi (2021) *In-vitro* Trial of *Salvia officinalis* Water-extract on Buccal-cavity-bacteria and Individual's-health-outcome at Highland. *J. Biotech. and Bioprocessing* 2(2); DOI: 10.31579/2766-2314/025

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## Abstract

This article was for "*In-vitro* Trial of *Salvia officinalis* Water-extract on Buccal-cavity-bacteria and Individual's-health-outcome at Highland"; the aim was an *in-vitro* trial carried out in highland area at "Taif" using Sage boiled water extracts with mouth swabs of healthy persons between. That to determine the extent ability to eliminate buccal cavity bacteria and the persons benefit. Official best type were sold from Pharmacies, Sage boiled water extracts were made. Mouth swabs were taken and put in Sage boiled water extracts, then were cultured at (first, third and fifth) hours. Percentage of buccal cavity bacteria eradication during *in-vitro* trial found, ranging from the three quarters to the total eradication within 3 hours, were 35%, 100% were eradication within 3 hours and represented 65%, 75% of eradicated. Mean percentage of buccal cavity bacteria eradication during *in-vitro* trial, eradication speeds were from 70-100% represented by 40%, proved the speed of eradication quickly in a very short time, rate from 40-70%, represented by 60%. Mean percent of buccal cavity bacteria eradication according to hour during *in-vitro* experiment; the eradication speed were in the first hour about half of the eradication were 43.8%, the second hour was 72.5%, and the third hour approached 83.8%. That concluded the Sage boiled water extracts had an effects on the buccal cavity bacteria and a positive effect to reduce buccal cavity bacteria and reduce pathogen infection as an individual's health outcome. That recommend the importance of the Sage boiled water extracts and it can used daily to prevent diseases.

**Key words:** *in-vitro*, *salvia officinalis* water-extract, buccal-cavity-bacteria, individual's-health-outcome, highland, sage

## Introduction

*Salvia officinalis* Linnaeus (Sage) aromatic plant used for medicinal treatment [1], also used both in culinary and medicinal preparations [2], so conducted on the effectiveness of herbal materials [3]. The administration of herbal antimicrobial dental products suggested as an auxiliary protocol to tooth brushing [4]. Antimicrobial effect of Sage extract has shown experimentally [5], dry sage leaves used in folk medicine for a variety of disorders [6], and Sage mouthwash significantly reduced the colony count [7]. Sage extract used against *Enterococcus faecalis* from single-rooted human teeth and following irrigates were then applied the extract reduced *Enterococcus faecalis* number of cells [8]. Buccal cavity bacteria included *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Streptococcus mutans*, essential, either through conventional techniques, the use of known antimicrobials, of plant products. Considering the increase in antimicrobial-resistant microorganisms, alternative methods involving the use of plant products may be a beneficial approach [9]. Sage extracts against oral bacteria antibacterial BCB on *Streptococcus mutans* and *Lactobacillus* species clinically isolated from dental surgery patients. The antibacterial activity evaluated by means of the disc diffusion and the minimum inhibitory concentration and was obvious success [10]. Sage extract on clinical

samples isolated BCB strains of *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Streptococcus mutans*, presented antimicrobial activity on all isolates [11].

The aim of the laboratory study was an *in-vitro* trial that carried out in the highland area at "Taif" using Sage boiled water extracts with mouth swabs of healthy persons between the ages of (20-30) year. That to determine the extent of Sage boiled water extracts ability to eliminate buccal cavity bacteria and the benefit for the persons. That were to clear the dangers of buccal cavity bacteria to body and prevent pass any bacteria from the mouth to cause diseases such as tooth decay and others that affect the digestive system or infect the body. As well as that would result in good individual's health outcome.

## Methodology

- **Sage samples:** Official best type were sold from Pharmacies, and then were collected without any chemical or herbal addition [12]. Sage boiled water extracts: That made by boiling water as (5 g + two hundred ml boiling water) and then let cool and were kept in closed bottles [13].
- **Mouth swabs:** Consent were collected from person's understudy, mouth swabs were taken from persons were not using any toothpaste

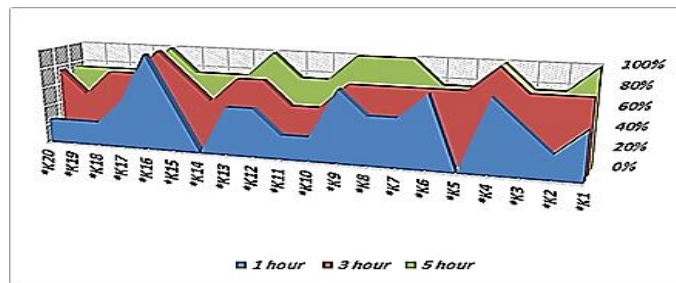
or eaten or drink anything. Each swab were put in five ml of Sage boiled water extracts for five hours in incubator at 37C. Culture swabs were taken from each tube at the time of trial at (first, third and fifth) hour and were cultured on "Moller Hinton Agar", then were followed growth by "Ethic Circumstances". The amount of living bacteria were counted by determination the count of growth

colonies then the results were applied by this Equations (Colony No. / 300 X 100), and so (Result – 100 = Eradication percent) [14].

- **Data analysis:** All data were recorded in mean type and was used Excel Scheme to yield tables and graphs more clear of effort results [15].

**Results and discussion**

Items	Eradication percent by hour						
	1 hour	3 hour	5 hour	*K *No	1 hour	3 hour	5 hour
*K1	50%	75%	100%	*K11	25%	50%	75%
*K2	25%	75%	75%	*K12	50%	75%	100%
*K3	50%	75%	75%	*K13	50%	75%	75%
*K4	75%	100%	100%	*K14	00%	50%	75%
*K5	00%	75%	75%	*K15	50%	75%	75%
*K6	75%	75%	75%	*K16	100%	100%	100%
*K7	50%	75%	100%	*K17	50%	75%	75%
*K8	50%	75%	100%	*K18	25%	75%	75%
*K9	75%	75%	100%	*K19	25%	50%	75%
*K10	25%	50%	75%	*K20	25%	75%	75%

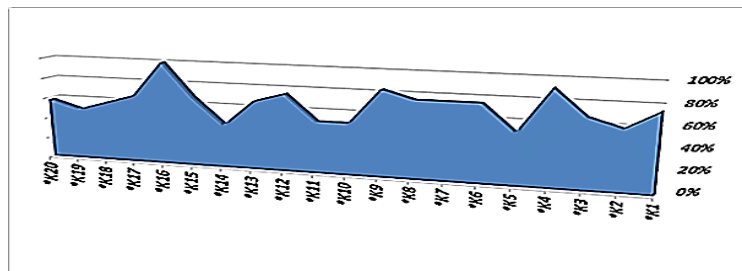


**Table 1 and graph 1.** Percentage of buccal cavity bacteria eradication during in-vitro trial

**Table 1 and graph 1** exhibited percentage of buccal cavity bacteria eradication during *in-vitro* trial, as results, the rate of eradication of buccal cavity bacteria by Sage boiled water extracts found, ranging from the eradication rate of three quarters to the total eradication within 3 hours. About seven, which were 35% of the cases understudy, found 100% were eradication within 3 hours and the other were 13, which represented 65% of the cases understudy. Three quarters 75% of the buccal cavity bacteria

eradicated, from this; it became clear that the Sage boiled water extracts the ability to eradicate buccal cavity bacteria in a commotion. The importance of eradication of buccal cavity bacteria and preserving the teeth and digestive system from causing diseases and this is one of the advantages and benefits of the Sage boiled water extracts on a person's health as individual's health outcome [8-11].

Items	*K 1	*K 2	*K 3	*K 4	*K 5	*K 6	*K 7	*K 8	*K 9	*K 10
Mean %	75%	58.3%	66.7%	91.7%	50%	75%	75%	75%	83.3%	50%
*K *No	*K 11	*K 12	*K 13	*K 14	*K 15	*K 16	*K 17	*K 18	*K 19	*K 20
Mean %	50%	75%	66.7%	41.7%	66.7%	100%	66.7%	58.3%	50%	58.3%



**Table 2 and graph 2.** Mean percentage of buccal cavity bacteria eradication during in-vitro trial

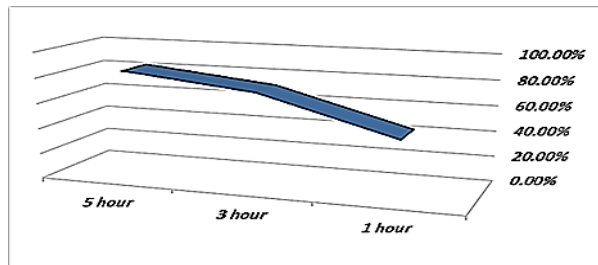
**Table 2 and graph 2** exhibited mean percentage of buccal cavity bacteria eradication during *in-vitro* trial, it was found from the arithmetic averages that the speed of eradication of buccal cavity bacteria oral bacteria by the Sage boiled water extracts. That was from 70-100% represented by 8

cases understudy, or 40%, to prove the speed of eradication buccal cavity bacteria quickly in a very short time. As for the eradication rate from 40-70%, represented by 12 cases understudy, i.e. 60% of the cases. The speed was medium but beneficial and may depend on the oral flora types, the

person's habits and the presence of organic materials or food residues in the mouth. That might disrupt the action of the Sage boiled water extracts on the buccal cavity bacteria. From the result, it becomes clear that the Sage boiled water extracts had excellent qualities to eliminate buccal cavity bacteria in a short time and quickly, which helps the person to

maintain oral health and the health of the body. As for the factors that can reduce or slow down the action of the Sage boiled water extracts, the person's habits, the presence of food residues in the mouth, and the mouth non-observance [8-11].

Items	1 hour	3 hour	5 hour
Mean %	43.8%	72.5%	83.8%



**Table 3 and graph 3:** Mean percent of buccal cavity bacteria eradication according to hour

**Table 3 and graph 3** exhibited mean percent of buccal cavity bacteria eradication according to hour during *in-vitro* experiment; it found from the arithmetic averages that the speed of eradication of buccal cavity bacteria by the Sage boiled water extracts through the average of each hour. It was in the first hour about half of the eradication of buccal cavity bacteria were 43.8%, the second hour was about three quarters of eradication of buccal cavity bacteria were 72.5%, and the third hour approached four-fifths 83.8%. It indicated the speed of eradication BCB quickly in a very short time. As for the eradication rate, it was progressive and rapid, which indicated the extent of benefit from the Sage boiled water extracts to eradicate buccal cavity bacteria. It turns out that the Sage boiled water extracts has excellent qualities to eradicate buccal cavity bacteria in a short time and quickly, which helps a person maintain oral health and healthy body as individual's health outcome [8-11].

## Conclusion

It was evident from experience that the Sage boiled water extracts had an effect on buccal cavity bacteria and a positive effect to reduce oral bacteria and reduce pathogen infection as an individual's health outcome.

## Recommendation

That recommend the importance of the Sage boiled water extracts and it can be used daily to prevent diseases.

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