

Research Article

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**PREPARATION AND EVALUATION OF ANTIFUNGAL BATH BOMB
OF ETHANOLIC EXTRACT OF BETEL LEAVES**

**Priya Jugale*, Aditya Kadam, Anjali Kadam, Neha Jetithor, P.S. Kore, S.K. Mohite,
S.K. Singh**

Department of Pharmaceutical Chemistry, Rajarambapu College of Pharmacy, Kasegaon.

Tal: Walwa, Dist: Sangli 415404

ABSTRACT

Bath bomb is preparation generally used for refreshing, relaxing and fragrant bath. The name looks scary but the formulation is quite interesting. Commonly bath bomb is prepared with Citric acid (C₆H₈O₇), Sodium Bicarbonate (NaHCO₃), Corn starch, MgSO₄ (Epsom salt), various natural colors etc. Due to the reaction of citric acid(C₆H₈O₇) and sodium bicarbonate (NaHCO₃) in presence of water, CO₂ gas forms and the fragrance present in formulation is evolved with it. So basically, bath bomb is a formulation made for the fragrant and relaxing bath. Introduction of therapeutic action like antiseptic and antifungal action in bath bomb is novel idea. Addition of betel leaves (piper betel) extract to the formulation give it antifungal and antibacterial property, turmeric gives antiseptic property, MgSO₄ (Epsom salt) relaxes the muscles.

Several researches prove that, the betel leaves extract gives antifungal activity. Mainly chavicol derivatives present in extract have lethal effect on the candida albicans. When the ethanolic extract will introduced in bath bomb preparation it will be beneficial for topical fungal infection. Patient can enjoy well fragrant and relaxing bath with antifungal activity. Turmeric used in preparation also has antiseptic activity. Bath bomb provides fun and relaxation with therapeutic activities..

Key words: Bath bomb, Antifungal, Medicated bath bomb, Piper betel.

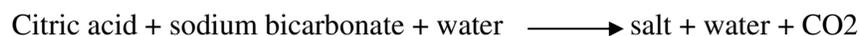
INTRODUCTION

Bath bomb:

It is a solid preparation of weak acid and strong base which is non-reactive under dry condition but when it is in contact with water, it reacts vigorously and form salt, water and carbon dioxide.

E.g., citric acid is reacted with sodium bicarbonate in presence of water.

Reaction:



In above reaction Citric and Sodium Bicarbonate react in presence of water to give sodium salt of Citric acid, water and Carbon Dioxide. Due to the evolution of Carbon Dioxide, bubbles will form in the water, with the bubbles, fragrance present in formulation also evolves and introduction of foaming agent of surfactant forms foam with bubbles. Citric and Sodium Bicarbonate do not irritate the skin due to sufficient dilution in water.

Medicated Bath Bomb

Medicated bath bomb is prepared by introduction of plant leave extract to the bath bomb ingredients. Several researches have been proved that betel leaves extract has antifungal activities.

Betel leaves

Scientific name of betel leaves is piper betel L. It belongs to Piperaceae family.

Chemical Constituents: - Betel leaves contain terpinine, carvacrol, chavicol and its derivatives, catechol, eugenol, oxalic acid, malic acid, nicotinic acid, ascorbic acid. It also contain significant amounts essential amount of amino acid. Betel leaves contain sugar, tannins and an essential oil. It contains chavicol, a phenol derivative with good antiseptic properties.

Antifungal activity: Hydroxychavicol, isolated from the ethanolic and ethyl acetate leaf extract of Piper betel L., (Piperaceae) was investigated for its antifungal activity against Candida albicans strains. Hydroxychavicol exhibited inhibitory effect on Candida species, killing of Candida albicans and Candida glabrata was observe up to 8 × MIC. On the basis of effect, it was concluded that betel leaves have antifungal activity.

MATERIAL AND METHOD

Combination of bath bomb

Formulation table:-

Table no 1: formulation table

Sr.no	Ingredients	Quantity	Role
1	Sodium bicarbonate	2.050g	Weak base
2	Citric acid	0.520g	Strong acid
3	Corn starch	1.000g	Binder
4	Magnesium sulphate	0.700g	Muscle relaxant
5	Betel leaves extract	0.700g	Antifungal
6	Turmeric	Qs	Colorant/antiseptic
7	Rose water	Qs	Fragrance, Anti-inflammatory

Extraction Process

Fresh leaves of young and mature betel were collected from the nursery or shop. All the leaves were washed with distilled water and then dried. Fine powder was obtained from the dried leaves using mortar and pestle. Cold extraction method was used for extraction process of fine leaves powder with solvents such as ethanol and ethyl acetate. 20g of powdered sample was soaked in 15 ml of both the respective solvents and kept in dark place for 4-5 days so that various chemical constituents from leaf will diffuse out into the solvents, then filtrate was collected following filtration process.

Method

Cup-plate diffusion method is used to study of zone of inhibition using ethanolic and ethyl acetate extract of piper betel extract and compare against Fluconazole suspension in sabourauds dextrose agar media.

Determination of zone of inhibition

Candida albicans incubated in agar media. Plates are allowed to dry and then 5 wells of 10 mm were prepared by sterile cork borer. Plant leaves extract were added using micropipette into the well of incubated plates were allow to stand for 10-15 min for diffusion of extract and incubated at 37° C for 48 hr. After incubation period, plates were examined for clear zone presence surrounding the wells containing the extract. Vernier caliper used for measuring zone of inhibition.



Fig no.1 antifungal activity

Preparation of bath bomb

A)

1. Weigh all dry ingredients
2. Add them to dish with stirring

B)

1. Take water in beaker and add turmeric in it with stirring
2. Add rose water in water containing beaker

Mix liquid in B to A slowly to make it slightly moist; do not add too much quantity of water what will accelerates the neutralizing reaction. Make the mixture slightly moist only.

Add the prepared mixture to mold with desired shape and freeze it for 30 to 45 min.

Remove the bath bomb carefully from the mold.

EVALUATION TESTS

1. Effervescent time

Prepared formulation of bath bomb has been evaluated for effervescent time the obtained data is as below.

Table no. 2. Effervescent Time.

Sr. No	Formulation	Time
1	F1	50 sec
2	F2	43 sec
3	F3	49 sec

2. pH test: pH of solution containing bath bomb is measured and results are as follows

Table no. 3. pH test.

Sr. No	Formulation	pH
1.	F1	6.5
2.	F2	6.7
3.	F3	6.5

RESULT

Zone of inhibition of ethyl acetate extract of betel leaves (piper betel) on *Candida albicans* was observe more than standard preparation of Fluconazole. Bath bomb containing the ethyl acetate extract of betel leaves was prepared and evaluated successfully.

DISCUSSION

Due to the wide use of antifungal agents, fungal species developing resistant to many of antifungal agents, as species resistant toward drugs increases day by day new drug development must be developed; if drug derived from natural resources it must be effective tremendously in treatment of fungal disease. New formulation is open new ways to attack fungal species specifically. Topical drug delivery helps to kill fungi effectively. Bath bomb preparation provide relaxing bath with therapeutic activity it's quite interesting to formulate.

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