FORMULATION OF GARGARISMA CONTAINING *Allium odorum* LEAVES EXTRACT

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ABSTRACT

The aim of the study was to formulate and evaluate the gargarisma containing *Allium odorum* leaf extract. First step was to extract the leaves then the extract were formulated into gargarisma. The evaluation was conducted for 56 days of storage. Minimum Inhibitory Concentration (MIC) of *Allium odorum* leaves extract againts *Streptococcus mutans* was 2,0% w/v while against *Eschericia coli* was 1,25% w/v. The gargarisma containing 4 and 8% w/v with variation on flavour killed bacteria with contact time at 30 second. The gargarisma were physically stable during time of investigation. The contact time and antiseptic value were unchanged. FA1 and FA2Nhad phenol coefficient as much as 0,9 while FB1 and FB2 were 0,94. Based on hedonic test, the formula with 4% w/v *Allium odorum* leaves extract using mint flavour was the most liked formula.

Key Words : Gargarisma, *Allium odorum*, antiseptics

INTRODUCTION

Gargarisma is liquid preparation, commonly containing antiseptics used to wash mouth, kill mouth smell, keep mouth fresh and healhty and prevent infections on mouth, gums and throat. Gargarisma could prevent plaque formation, dental caries and gingivitis (Priyohadi, 1986). Bacteria which plays important role in dental plaque formation were the one which could syntesize extracellular polysaccharides such as *Streptococcus mutans* (Roeslan and Melanie, 1996). Bacteria causing mouth's bad smell mostly gram negatives for example *Eschericia coli* (Alexander, 2006 ; Cole, 2000).

Allium odorum L. leaves commonly used in traditional medication such as preventing cancer, intestinal disorders, pneumonial bactericides, enhance stamina and dental infections. (Brewster, 1990).

Allium odorum L. leaves contained dimethyl sulfide, dialyl sulfide, methylalyl disulfide, dimethyl trisulfide, diallyl disulfide, methylallyl trisulfide, and dimethyl tetra sulfide, flavonoid, saponin, steroid/triterpenoid, sodium, potassium, phosphor, magnesium, mangan, vitamine A, B_1, B_2, C, sulphur, quersetin-3-glicoside, glucose, galactose, ferulic acid, p-coumaric acid, malic acid, citric acid, and linoleic acid (Brewster, 1990; Iskandar, 2006). Dimethyl disulfide and dimethyl trisulfide are the main components in *Allium odorum* L. leaves' volatile oils (Tang, 1992).

EXPERIMENTALS

Materials and Equipment

Allium odorum L, amyl alcohol, ammonia, anise oil, Aquadest, Ethanol 95%, chloroform, Ferri chloride, gelatin 1%, HCl, methanol. Nutrient Agar (Oxoid), Nurient Broth (Oxoid), peppermint oil, Pottasium hidroxide, Silica Gel GF 254, Sodium benzoat, Sodium Bicarbonate, Sodium hydroxide, Sulfuric acid 10% in methanol. Bacteria used in this experiment were *Streptococcus mutans* and *Eschericia coli* ATCC 25922.

Equipment used were Rotary evaporator, pH meter (Mettler toledo), Digital scale AND type GR-200.

Methods

Extractions and Phytochemical Screenings

Allium odorum L. Leaves were washed, dried and grilled into powder. 250 g of simplisia were macerated with 3500 mL ethanol 95% for 3 x 24 hours. Extract were collected and evaporated in *rotary evaporator* at 50^{0}C and then evaporated in water bath until crude extract were obtained. The next step was phytochemical screening. It was conducted based on Farnsworth methods (Farnsworth, 1996).

Determination of Minimum Inhibitory Concentration (MIC) of Extract

10% of extract in Dimethyl sulfoxide solution were diluted into 5; 2,5; 2,25; 2,10; 2,0; 1,75; 1,50; 1,25; 0,625; 0,3125; and 0,1563% concentrations. The effect of DMSO as solute were also studied.

Formulation of Gargarisma Containing various concentration of Extract with two different flavor

The formulas used two different concentration of extract to which double and four fold of the MIC. The formula used is shown in Table 1.

The extract were dissolved in ethanol 95% then diluted in aquadest. Sodium bicarbonat was decantated in aquadest. Sodium benzoat was dissolved in hot aquadest then added into extract solution. Sodium bicarbonat solution was added and so did sorbitol. It was homogenously mixed. Anise oil or peppermit oil which was dissolved in ethanol was added. Aquadest was added until 100 mL volume was obtained. The stability of each formula were investigated for 56 days of storage (Boylan, 1994; Swarbrick 1994).

Determination of Time Contact of Formula into *Streptococcus mutans* and *Eschericia coli*

Time of contact of each formula were investigated in test tube containing 0,1 mL bacteria. After 30 seconds contact, the sample media was withdrawal and incubated in nutrien agar media in petri dish. Contact time investigated were, 30, 60, 90 and 120 seconds. The dishes were incubated at 37 ^{o}C for 18-24 hours.

Physical Evaluation of Gargarisma

Investigtion were included organoleptic, pH, and qualitative analysis by Thin Layer Chromatograpy (TLC).