

ABSTRAK

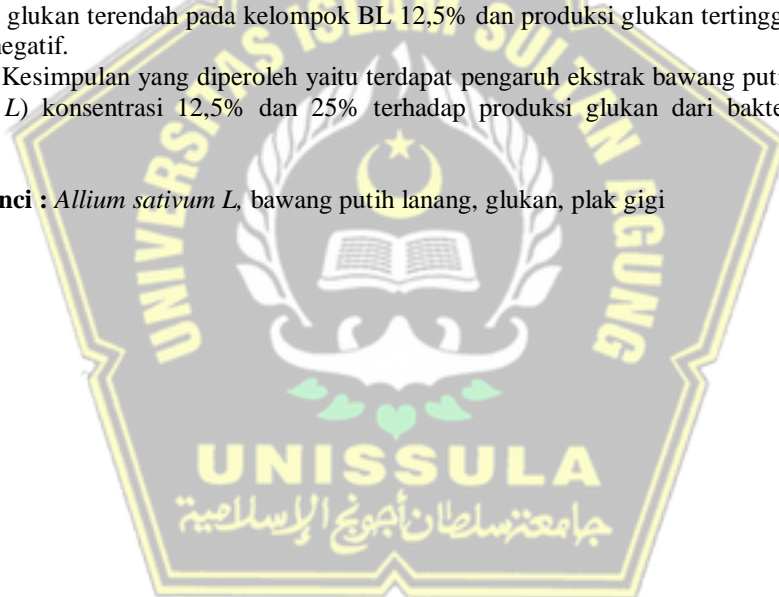
Karies adalah masalah kesehatan gigi yang umum diderita oleh banyak orang yang dapat disebabkan karena plak gigi. Bakteri *S.mutans* menghasilkan enzim *glucosyltransferase* (GTF) yang mengubah sukrosa menjadi glukukan. Bawang putih lanang (*Allium sativum L*) mengandung alisin bersifat antibakteri dengan menghambat sintesis DNA bakteri yang menyebabkan gangguan metabolisme pembentukan biofilm dengan menurunkan ekspresi gen pembentuk glukukan yaitu gen GTF. Penelitian ini bertujuan untuk mengetahui pengaruh ekstrak bawang putih lanang terhadap produksi glukukan dari bakteri *S. mutans*.

Penelitian berjenis eksperimental *post test only control group design in vitro*. Total sampel 24 terdiri dari empat kelompok (n=6) ekstrak bawang putih lanang konsentrasi 12,5% (BL 12,5%), ekstrak bawang putih lanang konsentrasi 25% (BL 25%), kontrol positif, dan kontrol negatif. Glukan didapatkan dari larutan suspensi bakteri *s.mutans* yang ditambahkan sukrosa untuk mendapatkan glukukan. Larutan suspensi bakteri yang mengandung glukukan ditambahkan pada setiap kelompok perlakuan dan diamati produksi glukukan dari setiap kelompok. Pengukuran produksi glukukan menggunakan spektrofotometer UV-Vis.

Hasil penelitian menunjukkan rerata produksi glukukan kelompok BL 12,5% yaitu 45.74 mg/dl, BL 25% yaitu 84.24 mg/dl, kontrol positif 65.02 mg/dl, dan kontrol negatif 87.50 mg/dl. Uji *One Way Anova* menunjukkan terdapat perbedaan yang signifikan antar kelompok ($P < 0.05$). Produksi glukukan terendah pada kelompok BL 12,5% dan produksi glukukan tertinggi pada kelompok kontrol negatif.

Kesimpulan yang diperoleh yaitu terdapat pengaruh ekstrak bawang putih lanang (*Allium Sativum L*) konsentrasi 12,5% dan 25% terhadap produksi glukukan dari bakteri *Streptococcus mutans*

Kata kunci : *Allium sativum L*, bawang putih lanang, glukukan, plak gigi



ABSTRACT

Caries is a common dental health problem suffered by many people that can be caused by dental plaque. *S. mutans* bacteria produce glucosyltransferase (GTF) enzyme which converts sucrose into glucan. Single bulb garlic (*Allium sativum L*) contains Allicin which has antibacterial characteristic that later on inhibits bacterial DNA synthesis which causes metabolic disorders to form biofilms by decreasing the expression of glucan-forming genes, namely GTF gene. This study aims to determine the effect of single bulb garlic extract on glucan production from *S. mutans* bacteria.

The type of this study was experimental post test only control group design in vitro. The total of sample was 24 consisted of four groups (n=6) of single bulb garlic extract with a concentration of 12,5% (BL 12,5%), single bulb garlic extract with a concentration of 25% (BL 25%), positive control, and negative control. Glucan was obtained by adding sucrose at the suspension solution of *s.mutans* bacteria to obtaining glucan. The bacterial suspension solution containing glucan was added to each treatment group and then the glucan production was observed for each group. The measurement of glucan production used a UV-Vis spectrophotometer.

The results showed that the average glucan production in the BL 12,5% group was 45,74 mg/dl, BL 25% was 84,24 mg/dl, positive control was 65,02 mg/dl, and negative control was 87,50 mg/dl. The One Way Anova test showed that there were significant differences among groups ($P<0.05$). The lowest glucan production was in the BL 12,5% group and the highest glucan production was in the negative control group.

The conclusion obtained is that there is an effect of 12,5% and 25% concentration of single bulb garlic extract (*Allium Sativum L*) on glucan production from *Streptococcus mutans* bacteria.

Keywords: *Allium sativum L*, single bulb garlic, glucan, dental plaque

