

## INTISARI

Karies gigi diderita oleh 45,3% populasi masyarakat Indonesia. Karies yang tidak dirawat akan menimbulkan infeksi saluran akar dan lesi periapikal. Salah satu penyebab infeksi saluran akar adalah bakteri *Enterococcus faecalis*. Tindakan yang digunakan untuk mengobati infeksi pada saluran akar dikenal dengan perawatan saluran akar (PSA). Pada perawatan ini digunakan larutan irigasi salah satunya berupa sodium hipoklorit (NaOCl) 2,5% yang memiliki efek antimikroba. Efek antimikroba dapat dilihat dari respons stres oksidatif yang ditimbulkan melalui peningkatan produksi *Reactive Oxygen Species* (ROS). Penelitian ini bertujuan untuk mengetahui pengaruh larutan NaOCl 2,5% terhadap respons stres oksidatif bakteri *Enterococcus faecalis*.

Pada penelitian ini dilakukan pengamatan terhadap stres oksidatif yang timbul akibat larutan NaOCl 2,5% melalui 3 parameter. Parameter tersebut meliputi jumlah koloni bakteri, aktivitas metabolisme, dan produksi ROS. Jumlah koloni dihitung menggunakan metode *spread plate*, aktivitas metabolisme diukur menggunakan analisis MTT, serta produksi ROS diukur menggunakan kit H<sub>2</sub>DCFDA. Hasil yang diperoleh dianalisis menggunakan *Independent T-Test*.

Hasil penelitian menunjukkan bahwa larutan NaOCl 2,5% berpengaruh secara signifikan ( $p < 0,05$ ) terhadap respons stres oksidatif pada bakteri *Enterococcus faecalis*. Respons tersebut ditandai dengan penurunan jumlah koloni bakteri, penurunan aktivitas metabolisme, serta peningkatan produksi ROS. Kesimpulan dari penelitian ini yaitu larutan NaOCl 2,5% dapat memengaruhi respons stres oksidatif bakteri *Enterococcus faecalis*.

Kata Kunci: *Enterococcus faecalis*, sodium hipoklorit (NaOCl) 2,5%, stres oksidatif, ROS

### ***ABSTRACT***

Dental caries affects 45.3% of the Indonesian population. Untreated caries lead to root canal infections and periapical lesions. *Enterococcus faecalis* becomes one of the causes in root canal infections. The procedure used to treat infection in root canals is known as root canal treatment (RCT). In this treatment, irrigation solution is used. One of which is sodium hypochlorite (NaOCl) 2.5% which has an antimicrobial effect. The antimicrobial effect can be seen from the oxidative stress response by monitoring the production of Reactive Oxygen Species (ROS). The aim of this study is to determine the effect of 2.5% NaOCl solution on the oxidative stress response of *Enterococcus faecalis* bacteria.

In this study, 3 parameters were used to investigate oxidative stress response. These parameters include the number of bacterial colonies, metabolic activity, and reactive oxygen species (ROS) production. The number of bacterial colonies was calculated using the spread plate method, metabolic activity was measured by MTT analysis, and H<sub>2</sub>DCFDA kit was used for determining ROS production. The results were analyzed by the *Independent T-Test*.

The results showed that 2.5% NaOCl solution had a significant effect on oxidative stress response in *Enterococcus faecalis*. The response was characterized by decreasing of bacterial colonies and their metabolic activities, also increasing ROS production. The conclusion of this study is that 2.5% NaOCl solution can affect the oxidative stress response of *Enterococcus faecalis* bacteria.

**Key words:** *Enterococcus faecalis*, sodium hypochlorite (NaOCl) 2.5%, oxidative stress, ROS