

## INTISARI

Deteksi plak gigi merupakan hal yang penting bagi pasien maupun dokter gigi untuk mengetahui tingkat kebersihan gigi. Deteksi plak sangat diperlukan untuk pencegahan karies gigi dan penyakit periodontal. Plak gigi akan memancarkan fluoresensi berwarna merah, ketika disinari dengan UV A (320-400 nm). Tujuan penelitian ini untuk mengetahui sinar UV LED panjang gelombang 400 nm sebagai pendeteksi plak gigi dibandingkan dengan *disclosing agent* sebagai *gold standart*.

Penelitian eksperimental semu dilakukan pada 44 gigi incisivus sentralis rahang atas dan bawah, dari anak-anak Panti Asuhan Sinar Melati Sleman dan asrama Muallimin Yogyakarta. Gigi disinari UV LED 400 nm dan difoto menggunakan kamera DSLR, selanjutnya gigi ditetaskan *disclosing agent* dan difoto kembali. Hasil foto dihitung luas permukaan plak gigi berdasarkan persentase terhadap luas permukaan labial gigi, menggunakan software rancang bangun Laboratorium SST, Fakultas Teknik, UGM, berbasis teknik pencitraan digital menghitung luas warna merah pada gigi, Dilakukan perbandingan luas permukaan plak antara deteksi sinar UV LED 400 nm dengan *disclosing agent*. Data dianalisis menggunakan uji nonparametric *Wilcoxon* dan uji korelasi *Spearman*.

Rerata luas permukaan plak deteksi menggunakan UV LED 400 nm ( $25,7632 \pm 20,8247$ ), deteksi menggunakan *disclosing agent* ( $29,9177 \pm 22,1266$ ). Hasil uji nonparametric *Wilcoxon*, tidak terdapat perbedaan yang signifikan antara luas permukaan plak gigi deteksi sinar UV LED 400 nm dengan *disclosing agent* ( $p>0,05$ ). Berdasarkan uji korelasi *Spearman* menunjukkan bermakna ( $p<0,001$ ) dengan kekuatan korelasi secara statistik kuat ( $r=0,720$ ) dengan arah korelasi positif. Kesimpulan penelitian ini tidak terdapat perbedaan deteksi menggunakan sinar UV LED 400 nm dengan *disclosing agent*, sehingga dapat digunakan sebagai pendeteksi plak gigi.

Kata kunci : sinar UV LED, deteksi plak gigi

## ABSTRACT

Detection of dental plaque is important for patients and dentists to know the level of dental hygiene. Plaque detection is necessary for prevent dental caries and periodontal disease. Dental plaque emits red fluorescence, when exposed to UV A (320-400 nm). The purpose of this research is to know UV LED light 400 nm as dental plaque detector compared with disclosing agent as gold standard.

Quasi experimental studies were performed on 44 maxillary and lower central incisors from children Sinar Melati Sleman Orphanage and Muallimin Yogyakarta dormitory. The teeth are exposed of UV LED light 400 nm and photographed using a DSLR camera, then the teeth dropped disclosing agent and photographed again. The results of the calculated surface area of dental plaque based on the percentage of the dental labial surface area, using software based on digital imaging techniques by calculate the red area on teeth, the design of SST Laboratory, Faculty of Engineering, UGM. A comparison of plaque surface area was made between the detection of UV LED light 400 nm with disclosing agent. Data were analyzed using nonparametric Wilcoxon test and Spearman correlation test.

Average surface area of plaque detection using UV LED 400 nm ( $25,7632 \pm 20,8247$ ), detection using disclosing agent ( $29,9177 \pm 22,1266$ ). Nonparametric Wilcoxon test results, there is no significant difference between the surface area of dental plaque detection of 400 nm UV LED light with disclosing agent ( $p > 0.05$ ). Based on Spearman correlation test showed significant ( $p < 0.001$ ) with statistically strong correlation ( $r = 0,720$ ) with positive correlation direction. Conclusions there was no difference in detection using 400 nm UV LED light with disclosing agent, so it can be used as a detector of dental plaque.

Keywords: *UV LED light, dental plaque detection*