

# POTENSI 8-Hydroxy-2'-Deoxyguanosine (8-OHdG) sebagai Bioindikator Genotoksisitas Akibat Paparan Logam Fe: Barang Bukti Toksikologi Forensik = POTENTIAL 8-Hydroxy-2'-Deoxyguanosine (8-OHdG) as a Bioindicator of Genotoxicity Dueexposure of Metal Fe: Evidence Forensic Toxicology

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## Abstrak

Paparan logam Fe diindikasikan penyebab genotoksisitas melalui pembentukan adduct 8-Hydroxy-2'Deoxyguanosine (8-OHdG). Pembentukan DNA adduct 8-Hydroxy-2'Deoxyguanosine (8-OHdG) diakibatkan stres oksidatif yang merusak DNA. stres oksidatif yang berupa radikal bebas OH timbul karena reaksi senyawa Fe dengan senyawa lain di dalam tubuh melalui reaksi Fenton. Konsentrasi 8-Hydroxy-2'Deoxyguanosine (8-OHdG) dalam urin dapat dievaluasi menggunakan alat LC-MS/MS. Konsentrasi 8-OHdG antara kelompok pengguna logam Fe dan kelompok kontrol dihitung menggunakan regresi linier kemudian diuji Independent T-test SPSS versi 23. Hasil penelitian diketahui konsentrasi rerata 8-OHdG kelompok pengguna logam Fe 153,807 +- 25,2501 ppb, sedangkan kelompok kontrol rerata konsentrasi 8-OHdG adalah 191,979 +- 26,2891 ppb. Terdapat pengaruh paparan logam Fe terhadap pembentukan 8-OHdG tetapi tidak ada perbedaan signifikan secara statistik antara kedua kelompok tersebut dengan nilai  $p=0,305$  ( $p>0,05$ ). Kesimpulan yang dapat ditarik adalah paparan Fe pada piranti ortodonti yang mengandung logam Fe dapat menjadi pemicu terbentuknya adduct 8-OHdG sehingga dapat menjadi bioindikator genotoksisitas dan barang bukti identifikasi toksikologi forensik tetapi masih aman untuk digunakan sebagai alat perawatan di bidang kedokteran gigi.

.....Exposure to Fe metal is indicated as a cause of genotoxicity through the formation of Adduct 8-Hydroxy-2'-Deoxyguanosine (8-OHdG). The formation of 8-OHdG is caused by oxidative stress which damage structure of DNA. Oxidative stress in the form of free radicals OH arises because of reaction of Fe compound with other compound in the body through the Fenton reaction. the concentration of DNA adduct 8-OHdG in urine can be evaluated using LC-MS/MS. Concentration 8-OHdG between the Fe metal users group and the control group was calculated using linear regression then tested Independent T-test SPSS version 23. The result of the study found the average concentration of 8-OHdG Fe metal users group 153,807 +- 25,2501 ppb, while the control group the mean concentration 8-OHdG was 191,979 +- 26,2891 ppb. There is an influence of Fe metal exposure on the formation 8-OHdG but there is no statistically significant difference between of two group with a value  $p=0,305$  ( $p>0,05$ ). The conclusion that can be drawn is that exposure Fe at ortodontic devices containing Fe metal can as trigger the formation 8-OHdG adduct can be bioindicator genotoxicity and forensic toxicology evidence of identification but still save for use as a treatment in the dentistry.