

Studi pembentukan DNA adduct 8-hidroksi-2'deoksiguanosin (8-OHdG) secara in vitro melalui reaksi fenton-like dengan butylated hydroxytoluene quinon (BHT-quinin) = In vitro study of DNA adduct 8-hidroxy-2'oxyguanosin (8-OHdG) formation through fenton-like reaction with buterlated hydroxytoluene quetion (BHT quinone)

Siti Hannaa, author

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Abstrak

Pada penelitian ini dilakukan studi in vitro pembentukan DNA adduct 8-hidroksi-2 'deoksiguanosin 8-OHdG sebagai biomarker kerusakan DNA, dengan mereaksikan 2 'deoksiguanosin dengan BHT-Quinon melalui reaksi Fenton-like Cr III dan H₂O₂. Reaksi dilakukan dengan variasi pH 7,4 dan pH 8,4, suhu 37 C dan 60 C, serta waktu inkubasi 7 dan 12 jam. 8-OHdG yang dihasilkan dianalisis menggunakan HPLC fasa terbalik dengan detektor UV-Vis. Hasil penelitian menunjukkan bahwa konsentrasi DNA adduct 8-OHdG yang paling tinggi diperoleh dari reaksi Fenton-like. Kesimpulan yang didapatkan ialah reaksi 2 'dG, BHT-Q, Cr III, dan H₂O₂ dihasilkan lebih besar dibanding reaksi 2 'dG, BHT-Q, dan Cr III serta 2 'dG, BHT-Q, dan Cr III dihasilkan lebih besar dibanding reaksi 2 '-dG, BHT-Q dan H₂O₂ serta reaksi 2 'dG BHT-Q. Pembentukan DNA adduct 8-OHdG pada pH 8,4 lebih tinggi dibandingkan pH 7,4. Selain itu pembentukan DNA adduct 8-OHdG pada suhu 60 C juga lebih tinggi dibandingkan suhu 37 C dan pembentukan DNA adduct 8-OHdG dengan waktu inkubasi 12 jam lebih tinggi dibanding waktu inkubasi 7 jam.

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In this research, in vitro study of DNA adduct 8 hidroxy 2 'deoxyguanosine 8 OHdG formation as biomarkers of DNA damage was conducted by reacting 2 'deoxyguanosine 2 'dG with BHT Q through Fenton like reaction Cr III dan H₂O₂. The conditions of reactions were variated in pH 7,4 and pH 8,4, temperature 37 C and 60 C and incubation time 7 and 12 hours. The 8 OHdG produce were analyzed by using reverse phase HPLC with UV Vis detector. The result showed that 8 OHdG produced from reaction between 2 'dG, BHT Q, Cr III, and H₂O₂ was higher than reaction between 2 'dG, BHT Q, and Cr III. It also showed that reaction between 2 'dG, BHT Q, and Cr III produced 8 OHdG higher than reaction between 2 'dG, BHT Q dan H₂O₂ also reaction of 2 'dG with BHT Q. The highest 8 OHdG formation obtained from Fenton like reaction. The formation of DNA Adduct 8 OHdG at pH 8.4 was higher than pH 7.4. Meanwhile DNA adduct 8 OHdG formation at the temperature of 60 C was also higher than 37 C and DNA adduct formation of 8 OHdG at 12 hours incubation time is higher than 7 hours.