

# Studi pembentukan DNA adduct 8 hidroksi-2'-deoksiganosin (8-OHdG) secara in vitro melalui reaksi fenton-like dengan butylated hydroxytoluene quinon (BHT-quinon) = In vitro study of DNA adduct hydroxyl-2'-deoxiguanosin (8-OHdG) formation through fenton-like reaction with butylated hydroxytoluene quinon (BHT-quinon)

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## Abstrak

### <b>ABSTRAK</b><br>

Pada penelitian ini dilakukan studi in vitro pembentukan DNA adduct 8-hidroksi-2 deoksiganosin (8-OHdG) sebagai biomarker kerusakan DNA, dengan mereaksikan 2 deoksiganosin dengan BHT-Quinon melalui reaksi Fenton-like (Cr(III) dan H<sub>2</sub>O<sub>2</sub>). 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 H<sub>2</sub>O<sub>2</sub> 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 H<sub>2</sub>O<sub>2</sub> 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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### <b>ABSTRACT</b><br>

In this research, in vitro study of DNA adduct 8-hydroxy-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 H<sub>2</sub>O<sub>2</sub>). The conditions of reactions were varied 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 H<sub>2</sub>O<sub>2</sub> 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 H<sub>2</sub>O<sub>2</sub> 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.