

ABSTRAK

Latar belakang

Asap rokok mengandung bahan toksik dan radikal bebas yang menyebabkan terjadinya kerusakan oksidatif, inflamasi, dan peningkatan resiko penyakit degeneratif. Sebagai upaya pencegahan, diberikan tambahan antioksidan dari luar tubuh. *Spirulina maxima* mengandung flavonoid fikosianin dan betakaroten, akan tetapi potensi sebagai antioksidan terhadap kerusakan DNA dan antiinflamasi pada paru-paru belum banyak diteliti. Penelitian ini bertujuan untuk mengetahui efek *Spirulina maxima* terhadap kadar *8-oxodG* dan kerusakan alveoli.

Metode

Penelitian eksperimental dengan rancangan *post test only control group design*, 24 tikus wistar dibagi menjadi 4 kelompok secara random: A (air 2 mL), B (kombinasi vitamin C 0,2mg/gBB dan vitamin E 0,04IU/gBB), C (*Spirulina maxima* 250mg/kgBB) dan D (*Spirulina maxima* 500mg/kgBB). Tikus dipapar asap rokok 3 kali sehari masing-masing diberikan 1 batang rokok selama 20 hari. Pada hari ke-21 diukur kadar *8-oxodG* urin dengan ELISA, dan paru-parunya untuk dibuat preparat Hematoksilin Eosin. .

Hasil

Rerata kadar *8-oxodG* dari yang paling rendah B ($62,17 \pm 6,05$)-D ($85,5 \pm 2,43$)-C ($119,83 \pm 2,56$)- A ($208,66 \pm 1,58$), sementara rerata persentase kerusakan alveoli dari yang paling tinggi B ($85,42 \pm 5,22$)-A ($84,78 \pm 6,05$)-C ($80,24 \pm 8,56$)-D ($65,44 \pm 1,19$). Hasil uji post hoc menunjukkan terdapat perbedaan signifikan penurunan kadar *8-oxodG* pada semua kelompok perlakuan ($p < 0,05$). Hasil uji *Mann Whitney* didapatkan perbedaan persentase kerusakan alveoli yang bermakna pada kelompok D dan A ($p < 0,05$)

Kesimpulan

Spirulina maxima 500 mg menurunkan kadar *8-oxodG* dan menurunkan persentase kerusakan alveoli.

Kata kunci : *Spirulina maxima*, *8-oxodG*, persentase kerusakan alveoli

ABSTRACT

Background

Cigarette smoke containing toxic, free radicals, and increased risk of degenerative disease *Spirulina maxima* as an antioxidant supplementation containing ficosianin & β -caroten flavonoid has been shown to have antioxidant activity. Few studies have been conducted on *Spirulina maxima* against oxidative stress induced DNA damage and antiinflammation in the lungs. This study aims to determine the effect of *Spirulina maxima* on the level of 8-oxodG on the level of 8-oxodG and alveolar damage.

Method

In vivo study with post test only control group design design. Twenty four wistar rats were exposed to cigarette smoke (3 times a day for 20 days) and randomly divided into 4 groups to receive either: A (2 mL water), B (combination of 0.2mg/gBW vitamin C and 0.04IU / gBW vitamin E), C (250mg / kgBW *Spirulina maxima*) and D (500mg / kgBW *Spirulina maxima*). On day 21, urinary 8-oxodG levels were evaluated with ELISA, and alveolar damage were evaluated from the lung pathology with Hematoxylin dan eosin (H&E) stains .

Results

Mean level of 8-oxodG in group B, D,C, A was (62.17+ 6.05) , (85.5 + 2.43) , (119.83 + 2.56), (208.66 + 1, 58) respectively. Mean percentage of alveolar damage B, A, C, D was (85.42 + 5.22), (84.78 + 6.05), (80.24 + 8.56), (65.44 +1,19). There was a significance difference in the decrease in 8-oxodG level among group A with group B, C,& D (p<0.05) and there was significant difference of percentage of alveolar damage in group D and A (p <0,05)

Conclusion

Spirulina maxima 500 mg decreased levels of 8-oxodG and percentage of alveolar damage leading to its potential benefit activity of antioxidants supplementatoion against oxidative stress induced damage

Keywords: *Spirulina maxima*, 8-oxodG, percentage of alveolar damage