

Aktivitas spesifik enzim manganese Superoxide Dismutase (MnSOD) dan hubungannya dengan sires oksidatif pada karsinogenesis payudara tikus yang diinduksi dengan DMBA (1,12-dimethylbenz(a)anthracene)

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Abstrak

Tujuan: menganalisis aktivitas spesifik enzim MnSOD pada karsinogenesis payudara tikus yang diinduksi DMBA dan hubungannya dengan sires oksidatif.

Disain: penelitian eksperimen in vivo dengan menggunakan hewan coba.

Metode: Sampel penelitian ini adalah darah dan jaringan payudara tikus betina Sprague Dawley (*Rattus norvegicus* L.), yang diinduksi dengan 20 mg/kg BB DMBA dalam minyak jagung sebanyak 2, 4, 6, 8 dan 10 kali serta kelompok kontrol yang hanya diberikan minyak jagung secara oral. Dari sampel darah dan jaringan payudara diukur aktivitas MnSOD dengan kit "RanSOD", enzim katalase, kadar MDA dan kadar asam sialat. Homogenat jaringan payudara diukur aktivitas spesifik enzim MnSOD dan katalase, kadar senyawa karbonil, MDA, asam sialat serta analisis jaringan histopatologi.

Hasil: Penurunan aktivitas spesifik enzim MnSOD pada darah secara bermakna, peningkatan yang tidak bermakna pada jaringan kemudian menurun bermakna, dan ada hubungan positif lemah antara aktivitas MnSOD di darah dan jaringan. Aktivitas enzim katalase plasma turun kemudian meningkat secara bermakna, dan menurun secara bermakna pada jaringan. Kadar MDA plasma darah mula-mula meningkat kemudian turun, pada jaringan payudara meningkat secara bermakna pada semua kelompok perlakuan. Kadar senyawa karbonil pada jaringan payudara yang diinduksi DMBA menurun pada semua kelompok perlakuan dibandingkan dengan kontrol meski tidak bermakna secara statistik.

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Background: The aim of this study is to analyze the specific activity of MnSOD in blood and rat's breast cell induced by chemical carcinogen DMBA related to oxidative stress.

Design: This is an in vivo experimental study.

Method: This study was conducted on 30 female Sprague Dawley rats which were divided into 6 groups and were induced twice. 4 times, 6 times, 8 times and 10 times by 20 mg/kg DMBA in corn oil orally. Rats were sacrificed 5 weeks after treatment, and the blood and breast were used for measurement of specific activity of MnSOD enzyme using "RanSOD" kit and catalase, also the level of sialic acid, MDA, protein carbonyl and histopathology analysis.

Result; Determination of specific activity of MnSOD in blood and breast cells in the lower levels compared to the control group and there were positive weak relationship between specific activity of MnSOD in blood and breast cells. Specific activity of catalase was decreased in early carcinogenesis then increased in blood and increased in all treatment groups in breast cells. The plasma MDA level was lower than control group in early induction then decreased but increased in breast cells in all treatment groups. The protein carbonyl level was decreased in all treatment groups compared to control one.

Conclusion: Specific activity of MnSOD is decreased in blood and breast cells in rats induced by DMBA. There are relationships between specific activity of MnSOD and the level of sialic acid, MDA, protein carbonyl, score of histopathology and specific activity of catalase.