

INTISARI

Latar belakang: Demensia menjadi perhatian dunia saat ini. Berbagai penelitian dilakukan untuk menemukan obat demensia. Sebagai penyakit degenerasi saraf, demensia menjadi penyakit yang sulit disembuhkan karena telah lama diketahui bahwa saraf orang dewasa yang telah terdiferensiasi tidak lagi berproliferasi. Kurkumin adalah senyawa polifenol alami yang terbukti sebagai antioksidan, antiinflamasi, antibakteri, antikarsinogen, dan bersifat proteksi saraf. Penelitian terbaru tentang efek kurkumin menunjukkan bahwa kurkumin dapat meningkatkan memori spasial dan meningkatkan neurogenesis.

Tujuan Penelitian: Untuk menguji hipotesis bahwa pengobatan kurkumin pada tikus Wistar yang diinduksi trimetiltin dapat memulihkan fungsi memori spasial dan meningkatkan jumlah saraf di CA1 dan CA2-CA3.

Metode Penelitian: Dua puluh lima tikus Wistar jantan dewasa (200-300 gram) secara acak dikelompokkan menjadi lima kelompok (K, T, TC100, TC200 dan TC300). Kelompok kontrol (K) diinjeksikan dengan larutan saline (i.p) dan larutan CMC-Na (p.o). Kelompok T, TC100, TC200 dan TC300 diinjeksikan dosis tunggal 8 mg/kgBB larutan TMT (i.p). Kelompok perlakuan (TC100, TC200 dan TC300) diberikan kurkumin dengan dosis 100, 200 dan 300 mg/kgBB selama 21 hari. Uji perilaku pada fungsi memori spasial dilakukan setelah pemberian kurkumin berakhir menggunakan uji *Y-Maze*. Jumlah sel pyramidal hippocampus area CA1 dan CA2-CA3 dihitung dengan metode stereologi non bias menggunakan $N_v \times V$ (ref).

Hasil Penelitian: Induksi trimetiltin sukses membuat hewan model demensia dengan menurunkan jumlah sel pyramidal secara signifikan tetapi tidak mengubah memori spasial. Setelah perlakuan tidak ada perbedaan signifikan yang diberikan oleh kurkumin dalam memulihkan memori spasial. Analisis stereologi non bias menunjukkan tidak ada pula peningkatan signifikan jumlah sel piramidal hippocampus area CA1 dan CA2-CA3 yang disebabkan oleh kurkumin setelah terpapar trimetiltin.

Kesimpulan: Kurkumin dengan dosis 100, 200, 300 mg/kgBB selama 21 hari belum mampu memulihkan fungsi memori spasial dan meningkatkan jumlah sel pyramidal CA1 dan CA2-CA3.

Kata kunci: kurkumin, demensia, TMT, memori spasial, sel pyramidal, hippocampus.

ABSTRACT

Background: Dementia is a global concern these days. Various studies were conducted to find the cure for dementia. As a neurodegenerative disease, dementia becomes a hard to cure disease because it has long been known that mature, differentiated neurons in adults do not proliferate. Curcumin is a natural polyphenol with evidences of antioxidant, anti-inflammatory, anti-bacterial, anti-carcinogenic and neuroprotective properties. Recent evidence suggest that curcumin can increase spatial memory and enhance adult neurogenesis.

Objective: To examine the hypothesis that curcumin treatment for trimethyltin-induced Wistar rats would be able to repair spatial memory function and increase the number of CA1 and CA2-CA3 pyramidal cells.

Methods: Twenty five adult male Wistar rats (200-300 grams) were randomly assigned to five groups (K, T, TC100, TC200 and TC300). Control group (K) was injected with saline solution (i.p) and CMC-Na solution (p.o). T, TC100, TC,200, and TC300 groups were injected a single dose of 8 mg/kgBW TMT solution(i.p). Treatment group (TC100, TC200 and TC300) were treated with 100,200 and 300 mg/kgBW dose of curcumin for 21 days. Spatial memory function was performed after treatment using *Y-Maze* test. The number of CA1 and CA2-CA3 pyramidal cells of hippocampus was counted using unbiased stereology method ($N_v \times V(\text{ref})$).

Results: Trimethyltin-induced dementia animal model by decrease the number of pyramidal cell significantly but not on the spatial memory. After treatment there was no significant differences between groups in the spatial memory. Unbiased stereology analysis shows there was no significant increase in number of CA1 and CA2-CA3 pyramidal cells of hippocampus caused by curcumin after trimethyltin-exposed.

Conclusion: Curcumin at doses 100, 200, 300 mg/kgBW for 21 days were not been able to repair spatial memory function and increase the number of CA1 and CA2-CA3 pyramidal cells.

Keywords: curcumin, dementia, TMT, spatial memory, pyramidal cells, hippocampus.