Studi Eksperimental Toksisitas Pajanan Toluena pada Serebelum Tikus = Experimental Study Of Toxicity With Toluene Exposure in Rat Cerebellum

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Abstrak

[Latar belakang : Toluena merupakan zat pelarut sering digunakan di berbagai industri seperti dalam pembuatan cat, lem dan lainnya. Toluena mempunyai sifat lipofilik dan memberikan efek toksik ke beberapa organ seperti sistem saraf pusat. Pada tahap biomolekuler, toluena merubah struktur lipid pada membran sel, sehingga terjadi peningkatan kadar MDA plasma dan jaringan. Pada Sistem Saraf Pusat, toluena bisa melewati sawar otak dan menyebabkan gangguan pada serebelum otak sehingga dapat meningkatkan kadar MDA serta terjadi perubahan struktur pada dinding sel astrosit.
Metode : Untuk mengetahui efek pajanan toluena selama 14 hari dengan dosis dibawah nilai ambang pada organ serebelum otak, dan dilakukan pemeriksaan kadar MDA serebelum otak, serta kerusakan dari sel Astrosit, menggunakan lima kelompok tikus jenis Wistar jantan dengan pajanan sebesar 1,6 ml; 3,2 ml; 6,4 ml; 12,8 ml; dan kelompok kontrol tanpa pajanan.
Hasil: Analisis uji nilai kadar MDA serebelum otak menggunakan One Way Anova dengan hasil tidak ada perbedaan rerata (p=0.133) antar kelompok pajanan dengan kelompok kontrol, dan analisis jumlah sel Astrosit dengan menggunakan One Way Anova didapatkan (p=0,310) dengan hasil tidak ada perbedaan antar kelompok pajanan.
Kesimpulan : Tidak ada perbedaan rerata pada kelompok pajanan pada nilai MDA serebelum Otak maupun jumlah Sel Astrosit yang terpajan toluena dengan dosis dibawah nilai ambang.
.....Backgrounds : Toluene is a solvent commonly used in various industries such as in the manufacture of paint, glue and others. Toluene has lipophilic properties and toxic effects to some organs such as the central nervous system. At this stage of biomolecular, toluene alters the structure of the lipids in cell membranes, resulting in an increased of plasma and tissue levels of MDA. In the Central Nervous System, toluene can cross the blood brain barrier and cause a disruption in the cerebellum of the brain, thereby increasing the levels of MDA and structural changes in the structure of astrocytes’ cells.
Methods : To determine the effect of toluene exposure for 14 days at doses below the threshold value on the organ brain cerebellum and cerebellar MDA examination of the brain, as well as causing damage to Astrocytes cells, using five groups of male Wistar rats with four types of exposure of 1.6 ml; 3.2 ml; 6.4 ml; 12.8 ml; and a control group without exposure.

Results : MDA value analysis test brain cerebellum using One Way Anova showed no significance mean difference (p = 0.133) between the exposed group and the control group. From the analysis of the number of cells Astrocytes using One Way Anova that obtained (p = 0.310) with no difference in outcomes among exposed groups.
Conclusion : There was no significance difference in the group mean exposure to MDA values and the number of cells of the cerebellum Brain Astrocytes exposed to toluene at a dose below the threshold value, Backgrounds : Toluene is a solvent commonly used in various industries such as
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