

Abstract

Aspartame is one of the most widely used artificial sweeteners in over 90 countries worldwide. It is a highly intensity sweetener added to a large variety of foods and drinks. The aim of this study was comparison of the antioxidant effect of vitamin E and *Curcuma Longa L.* extract on the histopathological lesions of aspartame consumption in rat. Male adult Wistar rats (n = 32) weighing 180-200 g were randomly divided into four groups as follows: first group (control) was given distilled water freely; the second group was given aspartame (350 mg/kg) by gavage; group 3 was given aspartame (350 mg/kg) by gavage and vitamin E (400 mg/kg) by peritoneal injection; and group 4 was given aspartame (350 mg/kg) and *Curcuma Longa L.* extract (200 mg/kg) by gavage for 30 days. At the end of experimental period, the animals were dissected and tissue specimens from livers and kidneys were immediately fixed in 10% buffered formalin. After tissue processing, hepatic and renal histopathological changes were examined microscopically and data were analyzed by using the *Kruskal-Wallis test*. Histopathological examination of liver in group 2 showed disruption of the hepatic cords, vacuolar degeneration and accumulation of some granules in hepatocytes. Furthermore, renal evaluation revealed degeneration of proximal and distal convoluted tubules; glomerular atrophy and increasing of urinary space. Above-mentioned lesions were significantly improved in group 3 and 4 in comparison to the aspartame receiving group ($P < 0.001$). Besides, Vitamin E and *Curcuma Longa L.* extract had a higher therapeutic effect in the liver tissues in comparison to the kidneys. Furthermore, treatment with vitamin E caused a significant decrease of histopathological lesions in comparison to *Curcuma Longa L.* extract ($P < 0.001$).

Key words: antioxidant, vitamin E, *Curcum Longa L.*, aspartame



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**Comparison of the antioxidant effect of vitamin E
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consumption in rat**

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