



## Anti-neuroinflammatory Potential of Carica Papaya Pulp Extract in Rats

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### Abstract:

The brain is the most sensitive organ to oxidative stress. Carbon tetrachloride (CCl<sub>4</sub>) is a well-known environmental biohazard which can cause free radicals' generation and toxicity in the brain. We studied the anti-inflammatory effects of Carica Papaya pulp extract against CCl<sub>4</sub>-induced brain inflammation in rats. We randomly divided 40 Sprague-Dawley male rats into 5 groups: Control, CCl<sub>4</sub>(2ml/kg BW 3times a week) treated group, pulp extract fed group, pulp extract fed group treated with CCl<sub>4</sub>, pulp extract fed group treated with CCl<sub>4</sub> for 8weeks then treated with the extract(250 mg/kg/day) for 2 weeks. We analysed the pulp extract using Gas chromatography/mass spectrometry and it showed high flavonoid and phenol contents. Rats treated with CCl<sub>4</sub> developed features of oxidative stress and inflammation in the brain due to the reduction of serum total antioxidant, brain content of glutathione, brain activities of catalase, superoxide dismutase and increase brain malondialdehyde. Additionally, CCl<sub>4</sub> caused an elevation in the inflammatory markers (Interleukin 6, tumour necrosis factor alpha) and the neurotoxicity markers (brain activities of monoamine oxidase and acetylcholine) and showed a significant decrease in brain ATP. Treating rats with the extract improved the levels of brain antioxidant and neuroinflammatory markers, lipid profile, liver and kidney function. The neuroprotective effect of papaya extract is likely attributed to its ability to scavenge free radicals, improve the activity of the antioxidant enzymes, and suppress the inflammatory responses. Our results suggested that the papaya pulp extract is a powerful protective natural antioxidant that shields the brain from inflammation.

### Biography:

Sara Khafaga is post graduate student. She has completed her Master at the age of 27 years from Alexandria University and interested in the feild of natural products and



using it in the treatment and/or protection from neuroinflammation.

### Publication of speakers:

1. Shaban, Nadia & Abdelrahman, Samah & el-kersh, Mohamed & Mogahed, Fayed & Talaat, Iman & Habashy, Noha. (2020). The synergistic hepatoprotective potential of Beta vulgaris juice and 2,3- dimercaptosuccinic acid in lead-intoxicated rats via improving the hepatic oxidative and inflammatory stress. BMC Complementary Medicine and Therapies. 20. 268. 10.1186/s12906-020-03056-6.
2. Shaban, Nadia & Ghonaim, Tayssir & Masoud, Aliaa & Eltokhy, Nabil & Embaby, Amira. (2017). Production, Purification and Characterization of Polygalacturonase from Bacillus licheniformis SHG10. Biochemistry Letters. 12. 95-109. 10.21608/blj.2017.47599.
3. Shaban, Nadia & Zahran, Ahmed & El-Rashidy, Fatma & Kodous, Ahmad. (2017). Protective role of hesperidin against  $\gamma$ -radiation-induced oxidative stress and apoptosis in rat testis. Journal of Biological Research-Thessaloniki. 24. 10.1186/s40709-017-0059-x.
4. Kodous, Ahmad & Shaban, Nadia & El-Rashidy, Fatma. (2017). Protective role of Hesperidin & Allopurinol against  $\gamma$ -radiation

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