J Exp Food Chem 2018, Volume: 4
DOI: 10.4172/2472-0542-C1-012

3rd International Conference on
FOOD CHEMISTRY & NUTRITION
May 16-18, 2018 | Montreal, Canada

Neuroprotective effect of *Eruca sativa* in STZ-induced diabetic rats via inhibition of oxidative/nitrosative stress

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Statement of the Problem: Reactive oxygen species, formation of AGEs and apoptosis are implicated in the pathogenesis of diabetic neuropathy. The aim of the present study was to explore the effect of *Eruca sativa* (Family: *Brassicaceae*) on thermal and mechanical hyperalgesia, allodynia, MNCV and oxidative-nitrosative stress in streptozotocin (STZ) induced experimental diabetes.

Methodology: Diabetes neuropathy was induced in Wistar rats by injection of STZ (65mg/kg, i.p.) 15 min after Nicotinamide (230mg/kg, i.p.) administration. Hydro-alcohol extract of *E. sativa* seeds was assessed by oral administration at 100, 200 and 400mg/kg in STZ-induced diabetic rats. Thermal hyperalgesia (Eddy's hot plate and tail immersion), mechanical hyperalgesia (Randall-Selitto) and tactile allodynia (Von Frey hair tests) were evaluated in all groups of streptozotocin diabetic rats to assess the extent of neuropathy. Diabetic rats developed neuropathy which was evident from a marked hyperalgesia and allodynia; reduced MNCV associated with increased formation of AGEs and reactive oxygen/nitrogen species.

Findings: Chronic treatment with *E. sativa* hydro-alcohol extract (100, 200 and 400mg/kg) for 30 days starting from the 60th day of STZ-induction significantly attenuated behavioral and biochemical changes associated with diabetic neuropathy.

Conclusion: Present study suggested that *E. sativa* hydro-alcohol extract corrected the hyperglycemia and partially reversed the pain response in diabetic rats through modulation of oxidative-nitrosative stress and reduction in AGEs formation in the diabetic rats and thus it may find clinical application to treat neuropathic pain in diabetic patients.

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