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Embelin modulates central neurotransmitters and attenuates streptozotocin induced cognitive impairment and biochemical abnormalities in Rats

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Embelin, the main active constituent of *Embelia ribes*, has been reported to possess various pharmacological actions, including anti-inflammatory, antioxidant, anticonvulsant and neuroprotective. The present study was design to investigate neuroprotective mechanisms and therapeutic potential of embelin against intracerebroventricular streptozotocin (ICV-STZ) induced experimental sporadic dementia in rats. STZ was infused bilaterally at the dose of (3 mg/ kg/1 μ l/1min) ICV on day 1st and 3rd. Spatial and non-spatial memory was evaluated using Morris water maze and object recognition task in rats. Embelin (2.5, 5 and 10 mg/kg i.p.) was administrated for 14 days from 7th day onwards after 1st ICV-STZ infusion in rats. On day 22 rats were sacrificed and hippocampal brain regions were used to identify biochemical, neurochemical and neuroinflammatory alterations. STZ infused rats showed significant learning and memory deficit which was associated with increase in oxidative stress (lipid peroxidation and nitrite), compromised antioxidant

defense (reduced glutathione), neurotransmitter alterations (AChE, dopamine, noradrenaline, 5-hydroxytryptamine, Gama amino butyric acid and glutamate) and elevation in neuroinflammatory cytokine (IL-1 β , IL-6 and TNF- α) levels. Embelin dose dependently attenuated STZ-induced cognitive deficit and biochemical alterations and restored hippocampal neurochemical levels. The observed protective effect might be attributed to the antioxidant and anti-inflammatory potential of embelin and its ability to restore hippocampal neurochemistry. Thus, the outcomes of the current study suggest therapeutic potential of embelin in cognitive disorders such as SAD.

Speaker Biography

Rimpi Arora pursued B pharm from SBS College of Pharmacy, Patti Punjab, (Year 2003-2006). She pursued her M pharm from IFS College of Pharmacy, Moga Punjab (Year 2007-2009) and her D pharm from SBS College of Pharmacy, Patti Punjab (Year 2001-2003). Her Field of Specialization is Neuropharmacology and Neurobiology.

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