

Effects of Waterpipe Whole Body Exposure on Gene Expression of Glutamatergic Transporters in Different Mesocorticolimbic Brain Regions.

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Abstract

Smoking, including Waterpipe tobacco smoking (WTS), is a major health issue worldwide. This thesis examines the effect of WTS, on inflammatory modulators and glutamate transporters in different mesocorticolimbic brain regions. The behavioral consequences of WTS exposure were assessed using elevated plus maze and open field tests. Three groups of Male Sprague-Dawley rats; a control group, a WTS-exposed group, and a WTS exposed group treated with ceftriaxone were used. WTS exposure was done for 2 hr/day, 5 days/week, for 4 weeks. Behavioral tests were conducted weekly 24 hr after exposure. During week 4 rats were given either saline or ceftriaxone 30 min before exposure. WTS induced withdrawal anxiety-like behavior as well as affected inflammatory modulators and glutamate transporters mRNA relative expression and these effects were attenuated by ceftriaxone treatment in different mesocorticolimbic brain regions. Thus, WTS caused neuroinflammation, glutamatergic dysfunction, and increased anxiety-like behavior, and ceftriaxone treatment attenuated these effects.

Key words: Anxiety-like behavior ,GLT-1, NFκ-B , TNF-α,VTA, xCT.