DESCENDING SEROTONERGIC AND NORADRENERGIC SYSTEMS DOES NOT REGULATE THE ANTIPRURITIC EFFECTS OF CANNABINOIDS*

Zeynep Gizem TODURGA, Ozgur GUNDUZ, Cetin Hakan KARADAG, Ahmet ULUGOL

Trakya University, Faculty of Medicine, Department of Medical Pharmacology, Edirne, Turkey

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Introduction

- For centuries, cannabinoids have been known to be effective in pain states (1, 2).
- Itch and pain are two sensations sharing a lot in common (3).
- The goal of this research was to observe whether the cannabinoid agonist WIN 55,212-2 reduces serotonin-induced scratching behavior and whether neurotoxic destruction of descending serotonergic and noradrenergic pathways mediate the antipruritic effect of WIN 55,212-2.

Materials and Methods

- Scratching behavior was induced by intradermal injection of serotonin (50 μg/50 μl/mouse) to Balb/c mice.
- The neurotoxins 5,7-dihydroxytryptamine (5,7-DHT, 50 μg/mouse) and 6-hydroxydopamine (6-OHDA, 20 μg/mouse) are applied intrathecally to deplete serotonin and noradrenaline in the spinal cord.
- To determine statistical differences between groups, two-way ANOVA, followed by Bonferroni-*t* test, were carried out.

Results

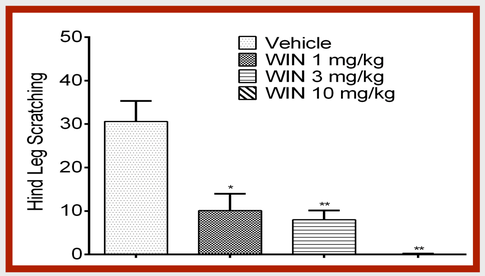

Figure 1.

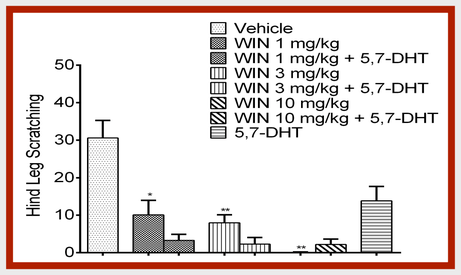

Figure 2.

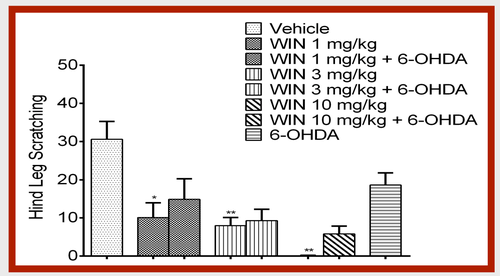

Figure 3.

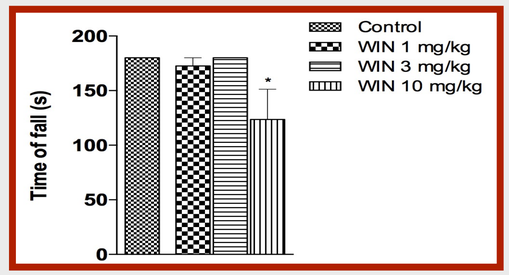

Figure 4.

- WIN 55,212-2 (1, 3, 10 mg/kg, i.p.) dose-dependently attenuated serotonin-induced scratches ($*P < 0.01$, $**P < 0.005$, Figure 1).
- Neurotoxic destruction of neither the serotonergic nor the noradrenergic systems by 5,7-DHT and 6-OHDA, respectively, had any effect on the antipruritic action of WIN 55,212-2 (Figures 2, 3).
- WIN 55,212-2 impaired locomotor performances only at the highest dose administered ($P < 0.05$, Figure 4).

Conclusion

- Our findings indicate that cannabinoids dose-dependently reduce serotonin-induced scratching behavior.
- Unlike its antinociceptive effect, neurotoxic destruction of descending inhibitory pathways does not mediate this antipruritic effect.

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