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Abstract

The effect of *Ocimum basilicum* total extract on the development of tolerance to morphine analgesia in male rats

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Background and objectives: Long-term exposure to opiates induces tolerance to the analgesic effect. The chronic use of opioids in glia cells produces pro-inflammatory mediators such as Tissue Necrosis Factor α and interleukins. Regarding the reports on *Ocimum basilicum* (Family: Lamiaceae) which has antioxidant and anti-inflammatory effects, it is probable that it could delay the tolerance to analgesic effect of morphine. **Methods:** Ethanol extract of *O. basilicum* was obtained via maceration method. Existence of rosmarinic and caffeic acids as the dominant components of the extract was revealed according to the thin-layer chromatography approach in the presence of standard compounds. Groups of rats received daily morphine (10 mg/kg, intraperitoneal; *i.p.*) in combination with vehicle or the ethanol extract (20, 40, 80 mg/kg, *i.p.*). The last group of rats received ethanol extract alone (40 mg/kg, *i.p.*) which was the lowest effective dose of the extract. Nociception was assessed using hotplate apparatus (55 °C). **Results:** *Ocimum basilicum* contained valuable antioxidant compounds such as rosmarinic and caffeic acids. Morphine tolerance was completed after the 7th day in the control and vehicle groups. Morphine tolerance was completed in the 9th day (p<0.05) with 20 mg/kg of the extract. On the other hand, tolerance was completed with 40 mg/kg and 80 mg/kg of the extract in the 13th day and 15th day respectively (p<0.001) and the lowest effective dose of extract (40 mg/kg, *i.p.*) without morphine had no analgesic effect. **Conclusion**: The results showed that the ethanol extract of *O. basilicum* dose dependently delayed morphine induced tolerance.

Keywords: analgesia, morphine, *Ocimum basilicum*, tolerance

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