eISSN:2664-5211 | pISSN:2663-4988

Research Highlight

IMPACT OF MORPHINE ON CENTRAL NERVOUS SYSTEM (CNS)

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Key words:
Opioids | morphine | astrocytes | subcutaneous injection | immunohistochemical methods | central nervous system

Increased usage of opioids is a potential threat worldwide which often leads to an opioid overdose crisis. The reinforcing impact of opioid makes the people vulnerable to illicit use[1,2]. In 2018, according to the Centers for Disease Control and Prevention (CDC), 128 people died in the United States after overdosing on opioids[3].

Opioid such as morphine helps to alleviate moderate or severe pain before or after the surgery, if prescribed properly[4]. It is reported that morphine derives from the poppy plant, scientifically known as Papaver somniferum[5] and this opioid acts by attaching with opioid receptors (specific protein) which is present in the brain, spinal cord and gastrointestinal tract in order to help the person to relieve the pain[6].

Astrocytes are star-shaped glial cells that are present in the brain as well as the spinal cord. These cells are in charge of homeostasis of the Central Nervous System.

The traditional perception of opioid actions are that they are neurally-mediated, however, the current research has exhibited a significant modulatory role in the areas of tolerance, analgesia and dependence[7].

Accordingly, new research was carried out in order to determine the effect of morphine and conditioning place preference on number of Astrocytes in rat hippocampus by using immunohistochemical methods[8].

For this purpose, the research team selected forty-eight male Wistar rats with an average weight of 220-250 g, afterward rats were categorized into 8 groups for behavioral tests. Experimental groups were subjected to morphine at different doses (2.5, 5, 7.5 mg kg^{-1}) by subcutaneous injection. On the other hand, sham groups were given saline dose (1 mL kg^{-1})[4].

At the end of this experiment, significant responses of morphine were noticed in 7.5 mg kg^{-1}. In a nutshell, morphine-based conditioned place preference showed a significant increase in the number of Astrocytes in experimental groups as compared to controls.

eISSN:2664-5211 | pISSN:2663-4988

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