MORPHINE: PAST, PRESENT AND FUTURE?

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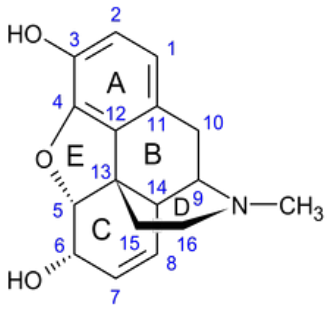
Introduction. According to the World Health Organization pain syndrome tends to happen in 90% of all disease, but only in 10% of them people use opioid analgesics. This class of drugs includes derivatives of phenanthrene, piperidine, benzomorphan and morphinan. Morphine is one of the most widely used narcotic analgesics in the world. An interest generated by the Morphine molecule relates to it`s chemical structure and mechanism of action and not only with it's actuality.



Aim. The aim of is work is the study of chemical structure and comparison of it's pharmacological activity. Analysis of available methods of synthesis of Morphine and studying the mechanism of it's action. Comparison mechanisms of action of narcotic analgesics and endogenous opioid peptides, analysis of their interaction with receptors in our organism.

Materials and methods. We used methods of scientific-bibliographic research. Information published in open sources by leading universities in the USA and Australia we're also applied.

Results and discussion. We studied historical facts about Morphine and Heroin, chronology from the time of structure opening and their formulas (including discovering of syringe and opioid receptors) till using opioid analgesics in present time, in this work. Besides, we examined four possible interactions of Morphine with protein receptors, considered structures of endogenous opioid peptides, including "message sequence" in details.

Conclusion. It was found that Morphine is optically active and has five asymmetric carbon atoms (C_5, C_6, C_9, C_{13}, C_{14}), 8 pair of racemic isomer, but only the levorotatory isomer of this drug is effective analgesic. Morphine is widely applied in clinical pain treatment, especially for terminal cancer pain and post-surgery pain. Synthesized dextrorotatory isomer of Morphine is completely devoid of any analgesic properties. The molecule is rigid, and it's T-shaped structure plays a key role in the interaction with the protein receptor and the manifestation of pharmacological activity. That's why Morphine is one of the most widely used narcotic analgesics all over the world.