

Preparation of a high affinity monoclonal antibody against morphine showing no cross reactivity with heroin

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Morphine (7, 8-didehydro-4, 5-epoxy-17-methylmorphinan-3, 6-diol) is obtained from opium, derived from the milky exudate of the incised unripe seed capsules of the poppy plant, *Papaver mniferum*. This compound is a potent narcotic analgesic with substantial potential for abuse and attitude significant health problem for human society. Drug testing is a rising demand to restrict the spread of substances of abuse and to provide more protection to the members of society. Monoclonal antibody (MAb) with a high affinity towards morphine can be considered as a great tool for its detection. In this study we prepared a MAb specific for morphine with no cross reactivity with heroin. To prepare immunogen, a Morphine derivative (6-hemisuccinate) was conjugated to cationized BSA. Mice were immunized for 4 months. ELISA technique was used to screen the presence of antibody in the serum and culture media. Beatty method was used to calculate antibody affinity.

Results indicated that prepared antibody has a high affinity ($5.9 \times 10^8 \text{ M}^{-1}$) towards morphine and less than 0.001% cross reactivity with heroin.

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