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Inhibitory effect of *Berberis vulgaris* aqueous extract on acquisition and reinstatement effects of morphine in conditioned place preferences (CPP) in mice

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Background and Aims: Relapsing to opioids after abstinence therapy is a major clinical problem in addicted people who were undergoing detoxification. Drug desiring is a subjective feeling which motivates to drug seeking and can produce relapse to drug abuse even long-time after withdrawal. It has been elucidated that Berberis vulgaris (barberry) can alleviate morphine withdrawal syndrome. Also it has been reported that aqueous extract of barberry possibly have inhibitory effect on NMDA receptors. Therefore, we decided to study the effects of aqueous extract of B. vulgaris fruit on morphine tendency in mice using conditioned place preference (CPP) method.

Methods: In experiment 1 (acquisition phase), rats underwent morphine-induced conditioned place preference (CPP) training with injections of morphine (40 mg/kg). In experiment 2 (extinction and reinstatement phases), rats underwent the same CPP training as in experiment 1 and subsequent extinction training on day 16th a reinstatement by CPP was done by injection of reminding 10 mg/ kg morphine.

Results: The administration of morphine (40 mg/kg for four days) produced place preference. In the first method, the aqueous extract of barberry (200 mg/kg) prevented morphine tendency to white cell in CPP method. In the second method, after i.p. injection of aqueous extracts of barberry at 100 and 200 mg/kg, the animals tendency toward the white cells of CPP chamber on the sixteenth day (after a reminder injection of morphine 10 mg/kg), was significantly reduced in mice. It fact the aqueous extract reduced significantly morphine reinforcement.

Conclusions: These results show that aqueous extract of barberry can reduce the acquisition and reinstatement of morphine-induced conditioned place preference.

Keywords: *Berberis vulgaris*; Barberry; Withdrawal Syndrome; Morphine; Opioid system; Conditioned Place Preference (CPP) method