

Sedative-hypnotic like activity of 7-methyljuglone isolated from *Diospyros lotus* L. roots

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Diospyros lotus L. (Ebenaceae) is an evergreentree that grows naturally in East Countries as well as in the Mediterranean area. Besides its nutritional value (is commonly cultivated for its edible fruits) and the importance that has covered in the folk medicine (the fruits and roots were used as a sedative, astringent and for the treatment of constipation, the leaves were used for lumbago) recent investigations have highlighted the potential therapeutic activities of *Diospyros lotus* L. such as antioxidant, anti-proliferative and anti-microbial (Nabavia et al., 2009; Loizzo et al., 2009; Uddin et al., 2013). We have recently demonstrated that the chloroform fraction of *Diospyros lotus* L. roots (CFDL) possess sedative activity (Uddin et al., 2014). One of the most abundant compound isolated from CFDL is 7-methyljuglone for which, at nowadays no studies are reported regarding its sedative activity. In the present study we have evaluated *in vivo* the anxiolytic-hypnotic like effects of 7-methyljuglone in mice by the aim of the open field and phenobarbitone-induced sleeping time test and we have also evaluated *in silico*, by docking studies, the involvement of GABA neurotransmission in its mechanism of action. The intraperitoneal (i.p.) administration of 7-methyljuglone reduce significantly and in a dose dependent manner the number of crossed lines in mice open field test (96.33±19.55, 82.5±7.5 and 45±12 for 2.5, 5.0 and 10.0 mg/kg, respectively) and concomitantly it shown, at dose of 5.0 and 10 mg/kg, a significant activity in term of onset of sleeping time (15.64±2.09 and 11.04±1.60, respectively) and also in its duration (21.34±3.30 and 45.23±2.96, respectively). In all the *in vivo* experiments, the effects of tested compound were also evaluated in presence of the reference drug diazepam. Moreover, 7-methyljuglone demonstrated *in silico* an interesting interaction with GABA_A binding sites. Our results add new knowledge on chemical constituents responsible for sedative-hypnotic activity of *Diospyros lotus* that could be partially related to its interaction with GABA binding sites and contextually legitimate the use of this plant as sedative in folk medicine.