

Impact of Gamma Irradiation on Biological Activities of *Artemisia herba alba* from Algeria

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Abstract : Phytotherapy is based on use of plant natural products holding the main sources of drugs with healing properties for the treatment of human, animal or vegetable diseases. With these aims, and to replace chemical preservatives in natural products, we are interested to use essential oils from Algerian endemic plants belonging to the Asteraceae family: *Artemisia herba alba* Asso, which was undergoes a hydro-distillation after its irradiation by Gamma rays at frequencies: 10, 20, and 30 KGray which gave respectively the following essential oil yields: 1.087%, 1.087%, 1.085%, compared with that of the untreated sample giving a yield of 1.27 %. Evaluation of the antioxidant activity in vitro of essential oil for *A. herba alba* has been assessed by two different methods: inhibition of DPPH radical and measurement of reducing power. The first method has not revealed a very big difference regardless of the dose of irradiation, the IC50 is about 4000 mg/l, the maximum of inhibition was around 49.4%, likewise, the test of reducing power awarded us a maximum reducing capacity was of 0.76%; both of results were registered by the specimen irradiated at 20 KGy, it has a more better antioxidant power than no irradiated sample but slightly. To combat *Fusarium culmorum*, causing the wilts and rots, we are focused on the antifungal screening of this aromatic plant. The results obtained, followed by measurements of Minimal Inhibitory Concentrations (MIC); showed promising inhibitory effect against pathogen tested. With a yield superior to 1%, the essential oil has shown a remarkable efficiency on the stump, mainly for sample irradiate at 30KGray (MICs= 625 µg/ml; MICc= 1250 µg/ml) with MIC of 2%. These results demonstrate a good antifungal activity, to limit and even to stop the development of the pathogenic microorganism and also the positive effect of dose of irradiation to upgrade this capacity as well, to uphold the antioxidant capacity.

Keywords : artemisia herba alba Asso, essential oil yield, gamma ray, antioxidant activity, antifungal activity

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