

## **In Vitro Evaluation of the Antimitotic and Genotoxic Effect by the Allium cepa L. Test of the Aqueous Extract of Peganum harmala L. Leaves (Laghouat, Algeria)**

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**Abstract :** Medicinal plants are an important source of bioactive molecules with biological activities such as anticancer, antioxidant, anti-inflammatory, antibacterial, antimitotic.... These molecules include alkaloids, polyphenols and terpenes. The latter can be extracted by different solvents, namely: water, ethanol, methanol, butanol, acetone... This is why it seemed interesting to us to evaluate in vitro the antimitotic and genotoxic effect of these secondary metabolites contained in the aqueous extract of the leaves of Peganum harmala L. by the Allium cepa L. test on meristematic cells by calculating the mitotic parameters (The mitotic index, the aberration index and the limit value of cytotoxicity). A spectrophotometric determination of secondary metabolites, namely alkaloids and flavonoids in the aqueous extract of this essence, was performed. As a result, the alkaloid content is estimated to be 28.42 µg EC/mg extract, and the flavonoid content is 12.52 µg EQ/mg extract. The determination of the mitotic index revealed disturbances in cell division with a highly significant difference between the negative control (distilled water) and the different samples (aqueous extracts, colchicine and quecetin). The exposure of meristematic cells to our samples resulted in a large number of chromosomal, nuclear and cellular aberrations with an aberration index reaching  $16.21 \pm 1.28\%$  for the 4mg/ml aqueous extract and  $11.71 \pm 3.32\%$  for the 10mg/ml aqueous extract. The limit value of cytotoxicity revealed that our samples are sublethal on Allium cepa L. meristematic cells.

**Keywords :** allium cepa l., antimitotic and genotoxic effect, aqueous leaf extract, laghouat (algeria), peganum harmala l., secondary metabolites

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