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Anti-inflammatory and Gastroprotective Activity of Sigoise Olive Leaves Extracts from Algeria: *In vivo* and *In silico* Evidence

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Abstract

The number of inflammatory diseases and gastric pathologies is continuously increasing, secondary effects of synthetic drugs have led researchers to focus on compounds of vegetable origin, of which olive leaves are part. In this context our study aims to evaluate some biological activities (anti-inflammatory and gastroprotective) of Algerian Sigoise extracts of olive leaves *in vivo* and *in silico* using molecular docking modeling. The anti-inflammatory activity of olive leaves extracts was highly significant, with an inhibition percentage of inflammation of 79%, close to that of the reference drug ibuprofen (82%). The *in silico* study showed a high affinity between oleocanthal , hydroxyterosol and tyrosol of sigoise olive leafs with COX-2 where the recorded interaction energies were of the order of -7.1 kcal/mol, -4.9 k cal/mol and -3.4 kcal/mol respectively. These values are relatively close to that of ibuprofen (G = -8.2 kcal/mol). The interaction energy of COX-2 with its reference ligand SC-588 is equal to -10.1 kcal/mol, the lowest RMSD values (1.02) was recorded with oleacanthal. At the same way, olive leaves extract have a gastroprotective activity wich was manifested by the protection of rats stomachs against ethanol alterations. This was clearly demonstrated by ANAPATH, which showed that the tissues of the stomachs treated with the extracts were not ulcerated and was similaire to those treated with drugs and even those of controls.

Key Words: *anti-inflammatory activity- Algerian origin - gastropretective activity – sigoise olive leaves*