

## Evaluation of the Inhibitory Activity of Natural Extracts From Spontaneous Plant on the A-Amylase and A-Glucosidase and Their Antioxidant Activities

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**Abstract :** Plant materials constitute an important source of natural bioactive molecules. Thus plants have been used from antiquity as sources of medicament against various diseases. These properties are usually attributed to secondary metabolites that are the subject of a lot of research in this field. This is particularly the case of phenolic compounds plants that are widely renowned in therapeutics as anti-inflammatories, enzyme inhibitors, and antioxidants, particularly flavonoids. With the aim of acquiring a better knowledge of the secondary metabolism of the vegetable kingdom in the region of Laghouat and of the discovering of new natural therapeutics, 10 extracts from 5 Saharan plant species were submitted to chemical screening. The analysis of the preceding biological targets led to the evaluation of the biological activity of the extracts of the species *Genista Corsica*. The first step, consists in extracting and quantifying phenolic compounds. The second step has been devoted to studying the effects of phenolic compounds on the kinetics catalyzed by two enzymes belonging to the class of hydrolase (the  $\alpha$ -amylase and  $\alpha$ -glucosidase) responsible for the digestion of sugars and finally we evaluate the antioxidant potential. The analysis results of phenolic extracts show clearly a low content of phenolic compounds in investigated plants. Average total phenolics ranged from 0.0017 to 11.35 mg equivalent gallic acid/g of the crude extract. Whereas the total flavonoids content lie between 0.0015 and 10.96 mg/g equivalent of rutin. The results of the kinetic study of enzymatic reactions show that the extracts have inhibitory effects on both enzymes, with IC50 values ranging from 95.03  $\mu$ g/ml to 1033.53  $\mu$ g/ml for the  $\alpha$ -amylase and 279.99  $\mu$ g/ml to 1215.43  $\mu$ g/ml for  $\alpha$ -glucosidase whose greatest inhibition was found for the acetone extract of *June* (IC50 = 95.03  $\mu$ g/ml). The results the antioxidant activity determined by ABTS, DPPH, and phosphomolybdenum tests clearly showed a good antioxidant capacity comparatively to antioxidants taken as reference the biological potential of these plants and could find their use in medicine to replace synthetic products.

**Keywords :** phenolic extracts, inhibition effect,  $\alpha$ -amylase,  $\alpha$ -glucosidase, antioxidant activity

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