IN VITRO EVALUATION OF ANTIOXIDANT ACTIVITY OF COFFEE PARCHMENT EXTRACTS

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The aim of our study is to enhance the ecological and economical value of coffee parchment as an industrial residue. Indeed, the coffee industry produces tons of residues and by-products of processing coffee berries and these represent a major source of pollution and environmental danger. The present study addresses the valuation of parchment as an easily accessible source of natural antioxidants and less expensive to replace synthetic antioxidants known for their toxic effects.

First step of this work represented in the extraction of phenolic compounds by a pilot scale soxhlet, using two solvents: chloroform and a hydro-methanolic mixture followed by fractionation by ethyl acetate and n-butanol, successively. The second step consisted of the quantification of phenolic compounds which was carried out by the Folin-Ciocalteu method and the quantification of flavonoids by the aluminum chloride method. The antioxidant activities were investigated by three different methods.

The total polyphenol and flavonoid assay results showed that the methanolic extract is richer in polyphenols compared to the other extracts with 42.83 ± 0.017 mg EAG / g MS and the acetate ethyl extract is richer in flavonoids contents with 0.082 ± 0.006 mg EC / g MS. Regarding the results of the anti-oxidant activity, the reducing power of all the extracts of the coffee parchment was higher than ascorbic acid activity and likewise for the DPPH radical scavenging activity, the parchment extracts showed a better activity. For the β-carotene bleaching method, the ethyl acetate and n-butanol extracts showed greater antioxidant activity than BHA.

The different antioxidant mechanisms with which the extracts of coffee parchment react can be attributed to the redox property of their flavonoids, tannins, caffeine or even the chlorogenic acid that they contain and which play an important role in scavenging, capturing and destroying free radicals, hydroperoxides as well as hydrogen peroxide. As a very promising result, coffee parchment can be used as an easily accessible source of natural antioxidants and less expensive to replace synthetic ones.

Keywords*: Valorisation, Extraction, coffee parchment, phenolic compound, antioxidant activity.*