



ANTIOXIDANTS PROPERTIES OF ETHANOLIC EXTRACTS OF POTATO BY-PRODUCTS

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Introduction. Potatoes (*Solanum tuberosum*), serve as major, inexpensive low-fat food sources, providing for energy, high-quality protein, pigments, and others nutrients. The potatoes plant also produce biologically active secondary metabolites these include phenolics compounds with antioxidant capacity, however is considered a worthless in the agricultural (1). Although there are several studies that have evaluated the content of these compounds in potato, few studies have evaluated the contents of these bioactive substances in plant residues after harvest.

The objective of this study was to evaluate the antioxidant properties of fractions of potato plant cultivar (Fiana).

Methods. Fractions (stem, leaf, sprout and peel) were subjected to drying to 45 °C for 24 h. The plants were pulverized and 35 g of sample were mixed with a solution of ethanol and acetic acid solution (95:5 ratio). The maceration was carried out with stirring constantly for 72 h. The sample was extracted to exhaustion with acid-ethanol mixture by sonicating for 20 min. The solvents were eliminated using rotatory evaporator. Total phenols concentration were measured by the methods described by Singleton and Rossi (1965)(2) and the antioxidant capacity was measured *in vitro* by DPPH and ABTS, assays and was determined using the method described by González *et al.* (2007)(3).

Results. Total phenolics contents were evaluated in four extracts of potato plant by-products using the Folin-Ciocalteu method the result are shown in **fig.1**.

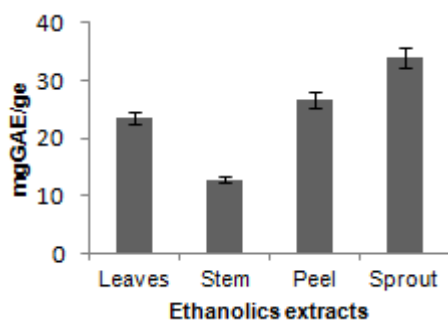


Fig.1 Total phenolics in potatoes by-products extracts. GAE (Galic Acid Equivalent), ge(gram of extract)

The extracts of sprout showed the highest phenolic contents values of 34.53 mgGAE/ge, It is also interesting to note that the phenolics were predominantly found in the in the peels with values of 26.76 mgGAE/ge, with a similar extent in leaves extracts and the lowest values was

observed in stem extracts with values of 13.485 mgGAE/ge .

Table 1 Antioxidant capacity in potatoes plant extracts.

| Sample | DPPH | ABTS |
|--------|---------------|--------------|
| | (μmolTEAC/ge) | |
| Leaves | 205.78±3.49 | 141.81 9.50 |
| Stem | 1.55±0.59 | 49.49±1.47 |
| Peel | 254.42±0.02 | 1354.67±0.04 |
| Sprout | 580.93±0.01 | 1954.3±0.05 |

All values are mean ± standard deviation (n=3). TEAC, Trolox Equivalents Antioxidant Capacity. Trolox (Vitamin C homologue) represented standar. ge, gram of extract.

Table 1 shows the antioxidant capacity (TEAC/ge) present in ethanolic extracts of potato by-products evaluated by DPPH and ABTS assay. A high antioxidant capacity was observed in sprout extracts with an average value of 580.93 to 1954.32 μmolTEAC/ge for DPPH and ABTS respectively, and the lowest antioxidant capacity was observed in stem extract (1.553 mgTEAC/ge). On the other hand increased antioxidant activity in extracts of the potato sprout may be a defense mechanism of the plant (4) or the use of ultrasound and vigorous shaking in their extraction process, however, effects of growing conditions and cultivation area on the content of phenolics cannot be ruled out. The results prove the Importance of phenolic antioxidant compounds in the extracts and behavior of the show that also contribute significantly to total antioxidant capacity reducing agents (free radical terminators).

Conclusions. Potato plant extracts evaluated in this study have high contents of phenols and antioxidant capacity. Thus, potato processing discard may be used in food formulations and their extracts could potentially be employed as an effective source of antioxidants in foods system.

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