

Evaluation of Antiproliferative, Antioxidant and Heavy Metals Activity of Tomatoes Grown in Toxic Muddy Soils

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Fruits of *Solanum Lycopersicum*, well-known as tomatoes, have got an high contents of essential nutritive elements for human health. They are rich of vitamins C, A, B group, D, K and minerals (P, Fe, Ca, Mg, Mn, Cu, K, Na) besides to be very rich in flavonoids and lycopene (1, 2). These characteristics make tomatoes the best allies against cancer disease and an essential food for a good health. This research is focused on tomatoes grown in polluted soils to ascertain their phytochemical and nutritive features. Heavy metals cause serious damage to living organisms by altering cellular signaling and by causing irreversible damage to biological systems (3). Pulp and seeds from tomatoes grown in muddy soils have been analyzed for their antioxidant power and their toxicity because of the possibility that heavy metals were present in the soils. An antioxidant assay on methanol extracts was made by using DDPH, while an ABTS [2,2'-Azino-bis-(3-ethylbenzthiazoline-6-sulfonic acid)] assay was used to evaluate the antioxidant activity of lipophilic fractions. Results of the antioxidant assay showed that the tomatoes showed a high level of antioxidant activity especially in the lipophilic fractions which contain the most representative compounds. Antiproliferative activity was performed on HeLa, PDAC, and A375 cell lines by [3-(4,5-dimethylthiazol-2-yl)-2,5-phenyl-2H-tetrazolium bromide] MTT assay. Neither the seeds nor the pulp of the extracts showed antiproliferative activity. The presence of heavy metals was evaluated by using spectroscopy of atomic absorption with a graphite oven. Test results showed the absence of heavy metals and these results have an interesting scientific role because they provide useful information for promoting food safety. These results indicate that *Solanum Lycopersicum* have a very important role not only for the primary prevention of a several diseases for its lycopene and flavonoids content but also for its capability to not adsorb Heavy Metals.

1. Rissanen et al. 2003, J Nutr 133:199–204
2. Vainio & Weiderpass 2006, Nutr Cancer 54:111–142
3. Rossato et al. 2011, *Ecotoxicol* 21:111–123