Investigating the SPF, Antioxidant and Anticancer Potential of Organic Turmeric (Curcuma longa) and Ginger (Zingiber officianale) Combinations on HTB67 & HTB69 Melanoma Cancer Cells

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Ginger and turmeric have been used as natural remedies for many centuries. There is interest in the development of natural products to enhance/replace chemicals in cancer drug therapies for deadly melanoma. The questions investigated were: a) do the SPF and polyphenol values change between individual extracts versus combinations? b) which extract will produce the highest antioxidant capacity and c) which extract will inhibit the growth of melanoma cancer cells the most effectively? The hypothesis was if ginger and turmeric extracts are compared, then the new turmeric and ginger combination will produce the largest SPF value, antioxidant capacity and reduction in the number of viable melanoma cancer cells after treatment. Plant samples from last year's research, as well as a new turmeric sample were clinically extracted with methanol to equal stock concentration of 20 mg/ml. Samples were run through a spectrophotometer to determine absorbance values and the SPF value was calculated. 96-well plates with triplicate samples were run three times with the following assays: Folin Ciocalteau Assay (polyphenol content), DPPH (antioxidant capacity) assay and the SRB colorimetric (antiproliferation) assay on the cultured melanoma cells (HTB67 & HTB69). The data partially supported the hypothesis. The SPF and antioxidant values both showed larger values for the turmeric and ginger combinations compared to the single extracts. The SRB assay data showed the viability of melanoma cells was effectively reduced to below t=0 values by the individual extracts including the older turmeric, new turmeric, mature/fresh white ginger. These extracts were also more effective than the two chemotherapy drugs. Future steps include dose response and western blot experiments.

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