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Evaluation of the anti-cancer activity of a curcumin analogue alone and in combination with current chemotherapeutics

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Melanoma is an aggressive malignancy that arises from melanocytes in the deeper skin layers. It is responsible for the majority of skin cancer deaths globally. Current treatment options include surgical excision, chemotherapies including cisplatin and taxol, radiation therapy, immunotherapy, and targeted therapy. Despite these treatments, the survival rate for malignant melanoma remains relatively low. Curcumin is naturally available as *Curcuma longa* (turmeric) and has thus far shown to have pharmacologic activity against melanoma cell lines in early studies. However, due to poor bioavailability and stability, naturally occurring curcumin is not an effective treatment for melanoma. These issues are avoided by synthesizing derivatives of curcumin (analogues). In this study we aim to assess the ability of one such analogue, compound A, to kill melanoma cells and to investigate if compound A works synergistically with the known chemotherapies taxol and cisplatin. I plan to use morphological and biochemical assays to determine cell viability, apoptosis (cell suicide), and autophagy in cancer cells following treatment. Preliminary results have shown that compound A is effective in inducing apoptosis in melanoma cells, and further work will determine its interactions with common chemotherapeutics. The result of this work could lead to a more effective and safer treatment using compound A alone or in combination with taxol and cisplatin.