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A novel anti-catagen formulation

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The life cycle of the hair bulb can be reduced to three phases: anagen, catagen and telogen. We are mostly interested in developing therapeutic strategies capable of counteracting the regression phase (catagen), that is mostly caused by apoptosis of epithelial and melanocyte cells. We have tested our working hypothesis on HFDPC-c cells, grown in culture in the Follicle Dermal Papilla Growth Medium, and apoptosis was induced by 24 hours incubation with 1 μ M staurosporin. This treatment resulted in a marked activation of Caspase-3 accompanied by cytoskeletal degradation, nuclear blebbing and cellular fragmentation. The addition of spermidine or rutine in the micromolar range concentration reduced staurosporin-induced caspase activity by over 50%, when the two agents were added simultaneously the same extent of caspase-3 inhibition was achieved with concentration 10 fold lower. Zeaxanthine alone was rather ineffective, however when it was added to the combined treatment, made by spermidine and rutine, the staurosporin-induced caspase activity was almost totally counteracted and the enzymatic activity was much more significantly reduced. These combined treatment was also very effective in preventing staurosporin-mediated cellular damage. The extent of cell loss was greatly reduced, and, differently from untreated cells, there was a total preservation and normal distribution of actin-tubulin cytoskeleton with normal cellular shape. Interestingly, our combined treatment counteracted also the over-expression of caspase-3 induced by staurosporin. In conclusion, this novel formulation may provide an effective preventing treatment for the catagen phase of the hair bulb life cycle.