

Effects of different extracts of curcumin on TPC-1, a papillary thyroid cell line

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The thyroid gland is one of the largest endocrine glands in the body. Thyroid cancers are the most common endocrine tumors and are more prevalent in women and elderly individuals. In particular, papillary thyroid carcinoma is often non-enveloped and multifocal, i.e., it simultaneously affects different parts of the thyroid gland, and spreads mainly because of lymph nodes.

Curcumin possesses a wide variety of biological functions, and thanks to its properties, it has gained considerable attention due to its profound medicinal value. We have undertaken the present work in order to define the possible role of curcumin in modulating the genetic expression of cell markers and to understand the effectiveness of this nutraceutical in modulating the regression of cancer phenotype.

As a template we used the TPC-1 cells treated with the different extracts of turmeric, and examined the levels of expression of different markers (proliferative, inflammatory, antioxidant, apoptotic).

Our data show for the first time that curcumin-enriched compounds are able to decrease TPC1 cell survival and this occurs through the induction of apoptosis mainly by significantly reducing the accumulation of Bcl2 and cyclin D1 and the levels of p21 and p53. Besides, β -catenin, involved in cell growing, is also reduced by these curcumin-enriched compounds. It is also noteworthy that Nrf2, a downstream target of p21, is also affected.

Key words

Curcumin, Thyroid, TPC-1 cells, Anti-oxidant, Nutraceutical.