

Thyrospheres enriched in stem-like cells from B-CPAP thyroid cancer cell line: morphomolecular characterization

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Many studies performed over the past years have shown that tumor growth is sustained by a subpopulation of cells with stem-like features (cancer stem cells, CSCs), such as self renewal, multipotency, high migration capacity, drug resistance and aberrant differentiation, but little is known about thyroid tumor CSCs. Among solid tumors, papillary thyroid carcinoma (PTC) is the most common type of thyroid cancer representing up to 80% of thyroid tumors.

Isolation and propagation of stem-like cancer cells from established cancer cell lines by sphere forming assay in selective serum-free medium has been extensively reported.

We report here the enrichment and morphomolecular characterization of sphere-propagating cells with stem-like properties from the B-CPAP papillary thyroid cancer-derived cell line.

Thyrospheres from B-CPAP cells could be propagated up to ten generations. The "stemness" profile was evaluated by functional assays, RT-PCR, western blot, immunocytochemistry. Sphere forming efficiency (SFE) and self renewal increased exponentially at every generation with maximum value at the 8th. Results showed an increase in mRNA expression of stem cell (Oct 3/4, Nanog, ABCG2, Nestin), endodermal (GATA4), tumoral (TP63), and early thyroid differentiated (PAX8, TTF1) markers. A decrease in mRNA expression was observed in late thyroid differentiated marker (TG) along the generation of spheres. Positive staining of Oct3/4, GATA4, Tp63 and TTF1 was also confirmed by immunoblotting and immunocytochemistry.

We conclude that thyroid cancer stem/progenitor cell populations are present in the B-CPAP cell line, and that it can represent a model to propagate putative thyroid cancer stem-like cells.

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