

## The effects of growth inhibitory peptide on follicular thyroid cancer cell growth, migration, and invasion

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### ABSTRACT

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**Aims and background.** Thyroid cancer is the most common endocrine neoplasm worldwide. Although differentiated thyroid cancers are associated with a favorable survival, the prognosis worsens dramatically for patients with distant metastasis. Metastases from follicular thyroid carcinoma (FTC) occur earlier and are more aggressive than those from papillary thyroid carcinoma. For FTC that is resistant to radioactive iodine, new treatments are urgently needed. Human alpha-fetoprotein (HAFP) is a tumor-associated fetal protein that has been demonstrated to regulate tumorigenesis. Growth inhibitory peptide (GIP), a synthetic 34-mer peptide isolated from the third domain of HAFP, has been shown to have antitumor growth ability in various human cancers. However, the effects of GIP in FTC have not yet been studied. The aim of this study was to investigate the antitumor ability of GIP in FTC.

**Methods and study design.** Using both PBS and GIP control peptide as a negative control, the antiproliferative activity of GIP in the WRO human FTC cell line was determined using a tetrazolium-based colorimetric assay. In addition, cell migration and invasion assays were used to measure tumor metastasis inhibition effects *in vitro*.

**Results.** GIP did not inhibit WRO cell proliferation in a time- or dose-dependent manner. However, in WRO cells treated with GIP for 4 days, migration was significantly inhibited at concentrations of 50 and 100  $\mu$ M (33.3% and 19.5%, respectively; both  $P < 0.05$ ). Cell invasion was also significantly inhibited at 50 and 100  $\mu$ M (67.1% and 39.0%, respectively; both  $P < 0.05$ ).

**Conclusions.** Although GIP failed to suppress FTC cell growth, it effectively interrupted both FTC cell migration and invasion abilities *in vitro*. Further validation in an animal model and elucidation of the underlying mechanisms will be required. GIP may potentially serve as an anti-FTC metastasis agent aiding current chemotherapy regimens. Free full text available at [www.tumorionline.it](http://www.tumorionline.it)

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**Key words:** growth inhibitory peptide, follicular thyroid cancer, cell migration, cell invasion, metastasis, cell proliferation.

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