

Anti-proliferative and anti-migratory effects of baicalin on cholangiocarcinoma cell line EGI-1

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Cholangiocarcinoma (CCA) is the second most frequent primary liver neoplasia. It mainly arises from the malignant transformation of biliary epithelial cells, although it might originate from either hepatic progenitor cells at the Hering canals or transformed hepatocytes. CCA is a highly aggressive tumor with extremely poor prognosis and limited therapeutic approaches.

Baicalin (BA) is one of the main bioactive flavonoids identified in the *Scutellaria Baicalensis* Georgi root dried extract which is extensively used in the Chinese traditional medicine. Together with the anti-inflammatory effect, the anti-neoplastic action is the most relevant BA property demonstrated on cancer cells of different origin.

Being aware of the need of new therapeutic weapons for CCA treatment, we investigated whether Baicalin could exert anti-proliferative and anti-migratory effect on EGI-1 cells, a highly metastatic CCA cell line derived from bile duct carcinoma.

We first tested different BA concentrations (from 5 to 200 μ M) in limiting EGI-1 viability using MTT assay. After 24h and 48h treatment, 5 and 10 μ M BA had no effect while rising from 25 μ M to 200 μ M (i.e. 25, 50, 100 and 200 μ M) BA exerted a significant cell viability reduction already at 24h and increased after 48h BA exposure. This reduction well correlated with the adherent absolute cell number decrease and it cannot be due to BA induced cell cycle impairment after neither 24 nor 48h treatment.

We also evaluated the anti-migratory BA potential by a wound healing assay adding different BA concentrations (5, 25, 50, 100 and 200 μ M) to the culture medium

immediately after performing a wound on confluent cell cultures. All BA concentrations but 5 μ M induced a significant reduction in the EGI-1 migration rate after 24h treatment. Moreover 25, 50 and 10 μ M BA showed similar migration inhibition extent at 24 and 48h whilst 200 μ M BA exerted a stronger inhibitory effect already after 24h exposure which increased with time in a significant way.

Taken together our preliminary results demonstrate that BA impairs CCA cell viability and migration suggesting a promising adjuvant therapeutic use for BA as anti-tumoral agent.

Keywords

Cholangiocarcinoma, EGI-1 cells, Baicalin, cell viability, cell migration.