# An in vitro short time-high dose drug exposure assay for predicting 5FU-resistance of colorectal cancer

許元勳

Chung-Wei Fan;Chang-Chuan Chan;Hong-Arh Fan;Soon-Hwei Hsu;Shih-Yuan Chen;Hsu YH;Chan EC

摘要

**Abstract**

The goal of this study was to develop a simple and rapid in vitro drug resistance assay to ascertain the effectiveness of 5-fluorouracil (5-FU) for the individual therapy of colorectal cancer. Colorectal cancer cells were isolated from tumor specimens and, after 4h exposure to high doses of 5-FU cell viability was measured with an ATP assay. The average IC50 concentration for 5-FU was calculated as 4000 microg/ml from 35 patients' tumors. The tumor cells were defined as extreme drug resistance with a survival rate 1 standard deviation (SD) over IC50, low drug resistance (LDR) with a survival rate 1 SD below IC50, and intermediate drug resistance (IDR) with survival rate between these two. The drug resistant assay for 102 patients' cancer cells showed that the proportion of patients with LDR to 5-fluorouracil was 19%. The in vitro drug resistance of the cancer cells was not correlated with cancer stages or by patient sex or age. However, most mucinous and poor differentiated cancer cells showed extreme or IDR. The in vitro ATP assay values for 25 Duke's D patients receiving postoperative 5-FU chemotherapy were comparable with clinical postchemotherapy responses. The sensitivity and specificity of the assay were 100 and 95%, respectively. This short time-high dose drug exposure assay may serve as an aid to improve 5-FU treatment for individual chemotherapy.