

Abstract

# Curcumin Enhances the Efficacy of 5-FU in Colo205 Cell Lines <sup>†</sup>

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† Presented at the 2nd International Conference on Natural Products for Cancer Prevention and Therapy, Kayseri, Turkey, 8–11 November 2017.

Published: 16 November 2017

**Abstract:** 5-FU is the main antimetabolite drug used in treating colon cancer. However, treatment success is only 10–15% due to drug resistance. To avoid resistance and improve treatment efficacy without increasing general toxicity, activity of combining curcumin with 5-FU in Colo205 cells was investigated for the first time with a real-time cell analyzer system. The cytotoxicity of 5-FU on Colo205 cells alone and in combination with curcumin were evaluated using the xCELLigence system. API-1 was used as positive control. Colo205 cells (25,000 cells/well) treated with 5-FU (1; 4; 8; 16; 32; 64  $\mu$ M), API-1 (12.5; 25; 50  $\mu$ M) and curcumin (25; 50  $\mu$ M) 24 h after cell seeding. Cell viability was monitored for 48 h post-treatment and IC50 values were calculated using xCELLigence software. Concentrations used in the combination were determined as, 64  $\mu$ M 5-FU, 50  $\mu$ M curcumin and 25  $\mu$ M API-1. Due to cytotoxic effect profile similarity between curcumin and protein kinase inhibitor API-1; when used in combination with 5-FU, curcumin was observed to increase the efficacy of 5-FU and accelerate the cytotoxic effect by removing the cytostatic period seen in the first 6 h. The study results show that the combination of 5-FU and curcumin in Colo205 can reduce the dose by increasing the cytotoxic activity of 5-FU and reducing the resistance to the anticancer drug.

**Keywords:** 5-FU; API-1; Colo205; curcumin; xCELLigence

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**Conflicts of Interest:** The authors declare no conflict of interest.



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