Isolation of a potential anticancer agent with protein phosphatase inhibitory activity from soil-derived Penicillium sp. strain H9318

ABSTRACT

Purpose: To determine the effect of the secondary metabolites from Penicillium sp. H9318 on cytotoxicity and cell cycle progression. Methods: A yeast PP1 inhibitory screening system was carried out to confirm the presence of anti-PP1c activity in crude acetone extracts of strain H9318. The extracts were fractionated and identified as Fraction S1 and Citrinin 9318 (CTN9318). Various cancer cell lines were used to test for the toxicity of the crude acetone extracts, Fraction S1 and Citrinin 9318, using MTT viability assay. Results: It was found that a colorectal cancer cell line, HT-29, was susceptible to Fraction S1 and Citrinin 9318. A propidium iodide (PI)-incorporated DNA assay was used to show that there was G2/M arrest in HT-29 by Citrinin 9318. Conclusion: Citrinin 9318 inhibits the viability of HT-29 via mitotic block. The results suggest that Citrinin 9318 is capable of exerting cytotoxicity and mitotic arrest in a colon cancer cell line, HT29.

Keyword: Citrinin; Fraction S1; G2/M; HT-29; H9318; Protein phosphatase 1