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Characterization of intestinal Caco-2 cell model by the effect of *Gracilaria coronopifolia* synbiotic

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The market contains only limited health care products that combine prebiotics and probiotics. In this study, we developed a marine-based *Gracilaria coronopifolia synbiotics* and verified the efficacy in intestinal Caco-2 cells to develop functional materials that promote intestinal health and prevent intestinal inflammation. *G. coronopifolia* was used as red algae prebiotic and *Bifidobacterium bifidum, B. longum* subsp. *infantis, B. longum subsp. longum, Lactobacillus acidophilus* and *L. delbrueckii* subsp. *bulgaricus* were mixed for the algae synbiotics. *G. coronopifolia* synbiotics were not toxic to Caco-2 cells and the survival rate was 101% to 117%, for a multiplicative effect on cell survival. After cells were induced by H2O2, the levels of Reactive Oxygen Species (ROS) increased to 151.5%, but after *G. coronopifolia* symbiotic treatment, decreased to 101.8% to 109.6%. After cells were induced by tumor necrosis factor α, the ROS levels increased to 124.5% but decreased to 57.7% with *G. coronopifolia* symbiotic treatment. *G. coronopifolia* synbiotics could effectively inhibit the production of ROS intestinal cells under oxidative stress (induced by H2O2 and TNF-α), which can reduce the damage of cells under oxidative stress. Functioning of intestinal cells could be improved by inhibiting the production of inflammatory factor substances (interleukin-8) with *G. coronopifolia* symbiotic treatment. Also, gastrointestinal diseases may be retarded by a synbiotic developed from the marine *G. coronopifolia* to promote intestinal health and prevent intestinal inflammation.

Biography

Yung-Jia Chan has completed her Bachelor's degree in Food Science (Food Technology) from Universiti Malaysia Terengganu (UMT), Malaysia and Masters from the Department of Medicinal Botanicals and Health Applications, Dayeh University, Taiwan.

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