Chenopodium formosanum CULTURE TECHNIQUE

Peptide from tempeh-like fermented Chenopodium formosanum: Counters senescence while enhancing antioxidant ability in non-replicative aging

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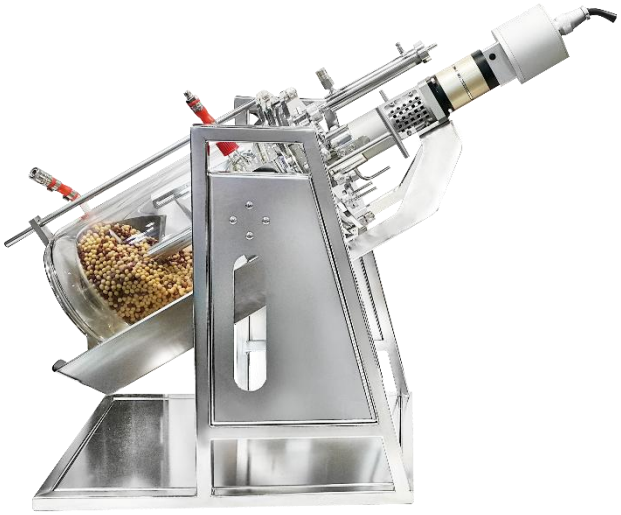
Abstract

This study investigates the effects of glycine-rich peptides (GRP) derived from tempeh-like fermented *Chenopodium formosanum* on cellular senescence and antioxidant capacity in non-replicative aging models. The results demonstrate that GRP effectively mitigates senescence markers and enhances antioxidant enzyme activities, suggesting its potential as a functional ingredient for promoting healthy aging.



Winpact Model: FS-V-SA05P

Introduction

Aging is associated with increased oxidative stress and cellular senescence, leading to various age-related diseases. Natural compounds with antioxidant properties are of interest for their potential to counteract these effects. *Chenopodium formosanum*, commonly known as Djulis, is a traditional grain rich in bioactive compounds. Fermentation processes, such as tempeh-like fermentation, can enhance the bioavailability of these compounds. This study explores the impact of GRP derived from fermented *Chenopodium formosanum* on oxidative stress and cellular senescence.

Materials and Methods

Fermentation Process:

Chenopodium formosanum grains were subjected to tempeh-like fermentation using [specific microorganisms], following optimized fermentation conditions to maximize GRP production.

Peptide Extraction and Characterization:

Post-fermentation, peptides were extracted and analyzed using techniques such as High-Performance Liquid

weight distribution.

Cell Culture and Treatment:

[Specific cell lines] were cultured under standard conditions and treated with varying concentrations of GRP to assess their effects on markers of senescence and oxidative stress. *Assessment of Senescence and Antioxidant Activity:*Senescence-associated β-galactosidase (SA-β-gal) staining was performed to evaluate cellular senescence. Antioxidant enzyme activities, including superoxide dismutase (SOD) and catalase, were measured using standard assay kits.

Results

Treatment with GRP resulted in a significant reduction in SA-β-gal positive cells, indicating a decrease in cellular senescence. Additionally, there was a notable increase in the activities of antioxidant enzymes SOD and catalase in GRP-treated cells compared to controls. These findings suggest that GRP enhances the cellular antioxidant defense system and mitigates markers of senescence.

References

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