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Improved antioxidative and cytotoxic activities of chamomile (*Matricaria chamomilla*) florets fermented by *Lactobacillus plantarum* KCCM 11613P

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Key words: Chamomile, Flavonoid, *Lactobacillus plantarum*, *Matricaria chamomilla,* Antioxidant, Cytotoxicity

Backgrounds

- The major bioactive compounds of *M. chamomilla* are phenolics
- *M. chamomilla* has various bioactive activities such as antimicrobial anti-inflammatory, antispasmodic, antiviral, *etc*.
- However, the activities is low practically in nature for its medicinal applications



Objective

To improve antioxidative and cytotoxic effects of *M. chamomilla* fermented by *L. plantarum* KCCM 11613P against cancer cell lines for further application in the functional food and pharmaceutical industries.

Materials and Methods

Materials

- Plant: Chamomile (*Matricaria chamomilla)*
- Microorganism:*Lactobacillus plantarum* KCCM 11613P

Methods

- Extraction: at 120°C for 30 min in an autoclave
- Fermentation: at 30°C for 72 h

Evaluation

- Bioactive compounds: growth rate, total polyphenols and flavonoids
- Antioxidative activities: DPPH, β-carotene bleaching, FRAP assay
- Cytotoxic activities: MTT assay on AGS, HeLa, LoVo, and MCF-7, MRC-5

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Results

- The content of total polyphenol in chamomile was reduced from 21.75 to 18.76 mg GAE/g by fermentation.
- DPPH radical capturing activity of fermented chamomile was found to be 11.1% higher than control.
- Fermented chamomile showed a cytotoxic effect of ~95% against cancer cells at 12.7 mg solid/ml of broth, but MRC-5 cells were significantly less sensitive.



Suggestion

Fermentation of chamomile could be applied to develop the natural antioxidative and anticanceric products due to its increased biofunctional activities.