

International Conference on

# Nutritional Science and Food Technology

July 02-03, 2018 Rome, Italy

## Immune-enhancing activity of *C. militaris* fermented with *Pediococcus pentosaceus* (GRC-ON89A) in CY-induced immunosuppressed model

Ha-Kyoung Kwon<sup>1</sup>, Dong-Ki Park<sup>2</sup> and Hye-Jin Park<sup>1</sup>

<sup>1</sup>Department of Food Science and Biotechnology, Gachon University, South Korea

<sup>2</sup>Cell Activation Research Institute, South Korea

### Abstract

**Background:** *Cordyceps militaris* (*C. militaris*) is reported to exert various immune-activities. To enhance its activity, we fermented *C. militaris* with *Pediococcus pentosaceus* ON89A (GRC-ON89A). In this study, we investigated the immune-enhancing activity of GRC-ON89A using an immunosuppressed model.

**Methods :** Immunosuppression was induced by intraperitoneal injection of cyclophosphamide (CY). Each group was orally administered distilled water, GRC-ON89A or GRC, respectively. The phagocytic activities against IgG-opsonized FITC particles were measured using a phagocytosis assay kit. The contents of  $\beta$ -glucan, cordycepin and SCFA were measured using  $\beta$ -glucan kit, liquid chromatography-mass spectrometry analysis and Gas chromatography-mass spectrometry analysis, respectively.

**Results:** Among GRC fermented with different probiotic strains (*Pediococcus pentosaceus* ON89A, *Lactobacillus pentosus* SC64, *Weissella cibaria* Sal.Cla22), GRC-ON89A induced the highest elevation of nitric oxide production and enhanced phagocytic activity of RAW 264.7 cells. In primary cultured murine macrophages from normal and CY-treated mice, GRC-ON89A increased phagocytic activity, compared to that in control cells. GRC-ON89A also significantly induced the mRNA expression of TNF- $\alpha$  and IL-10 and the levels of phosphorylated Lyn, Syk and MAPK. The contents of  $\beta$ -glucan, cordycepin and SCFA in GRC significantly increased after ON89A fermentation, compared to those in unfermented GRC.

**Conclusion:** These results indicate that GRC-ON89A exerted enhanced immunostimulatory activity and contained more nutritional components, compared to unfermented GRC. Our results suggest that GRC-ON89A may be applied as an agent for immune boosting therapy in immunosuppressed patients.

### Biography

Dr. Dong-Ki Park is currently working at Cell Activation Research Institute, South Korea. He published many articles in reputed journals and attended international conferences.

email: Parksdk@cellacti.com