

**A polysaccharide isolated from *Dictyophora Indusiata* promotes recovery from antibiotic driven intestinal dysbiosis and improves gut epithelial barrier function in a mouse model**

**Sadia Kanwal**

Dalian Medical University, China

Despite the tremendous biological activity of polysaccharides from the mushroom *Dictyophora indusiata*, its role in the restoration of gut microbiota has not yet been explored. The present study aimed to investigate whether *Dictyophora Indusiata* promotes polysaccharide (DIP) could modulate the recovery of gut microbiota composition and intestinal barrier function after broad-spectrum antibiotic-driven dysbiosis. Alteration and restoration in the microbial communities were elucidated by the Illumina MiSeq platform. Colon histology, expression of tight-junction associated proteins, and serum/tissue endotoxin and cytokine levels were evaluated. Two-week daily oral administration of clindamycin and metronidazole resulted in reduced bacterial diversity and richness, and perturbed the microbial flora at various taxonomic levels (altered *Firmicutes/Bacteroidetes* ratio and increased relative abundance of harmful flora (*Proteobacteria*, *Enterococcus* and

*Bacteroides*), whereas DIP administration reversed the dysbiosis and increased beneficial flora, including Lactobacillaceae (lactic acid-producing bacteria), and Ruminococaceae (butyrate-producing bacteria). In addition, it resulted in the reduction of endotoxemia (through lipopolysaccharides (LPSs)) and pro-inflammatory cytokine (tumor necrosis factor alpha (TNF- $\alpha$ ), interleukin 6 (IL-6), and interleukin 1 $\beta$  (IL-1 $\beta$ )) levels, with the increased expression of tight-junction associated proteins (claudin-1, occludin, and zonula occludens-1). These findings not only suggested a comprehensive understanding of the protective effects of a DIP in the restoration of gut microbiota but also highlighted its role in the enhancement of gut barrier integrity, reduction of inflammation and lowering of endotoxin levels in mice.

e: Sadiakanwal22@yahoo.com



Notes: