



**Probiotics can  
induce protective  
humoral and cellular  
immunity in patients  
with COVID-19<sup>1</sup>**

**ViBact-DS**

(Bacillus Mesentericus – 2 million, Clostridium Butyricum – 4 million, Streptococcus Faecalis – 60 million, Lactobacillus Sporogenes – 100 million)

Secondary bacterial pneumonia presents as a significant complication of epidemic and pandemic viral respiratory infections<sup>1</sup>

Increasing morbidity and mortality<sup>1</sup>



Virus infection promotes bacterial attachment and colonization<sup>1</sup>

Disruption of epithelial barriers<sup>1</sup>

Alteration of the innate immune response<sup>1</sup>

Improving immune response helps to combat these viral as well as bacterial infections<sup>1</sup>

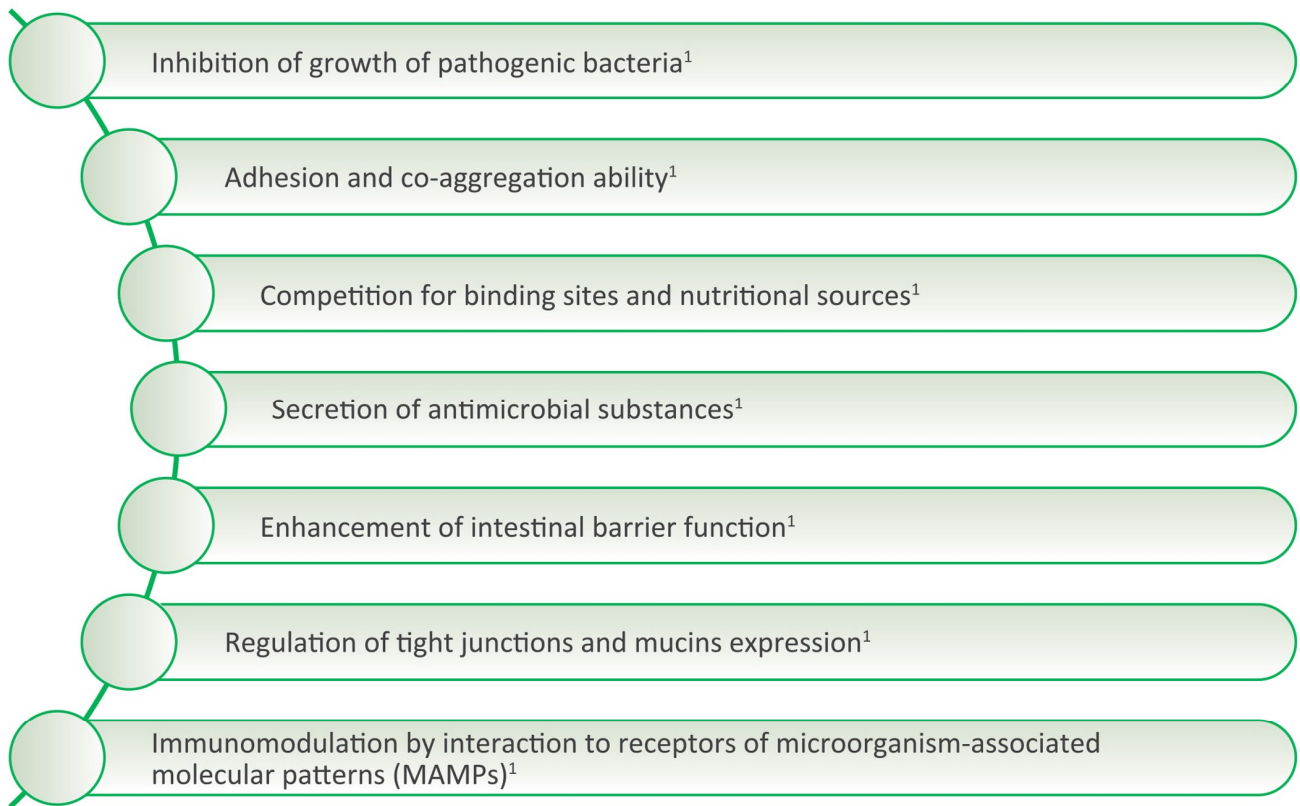
Use of probiotics can help to control the growth of pathogenic microorganisms and modulate the immune response in such diseases<sup>1</sup>



PROBIOTICS

According to a Cochrane meta-analysis, probiotics show efficacy in reducing the incidence and duration of acute respiratory tract infections of viral origin, as well as the need for several antibiotic courses<sup>1</sup>

## MECHANISM OF ACTION OF PROBIOTICS



## PROBIOTICS AND IMMUNITY

**Probiotics can modulate the immune system by binding of their MAMPS with pattern recognition receptors (PRRs) expressed<sup>1</sup>**



Certain short-chain fatty acids (SCFA) derived microbiota fermentation show immunoregulatory function<sup>1</sup>

Bind to cell surface G protein-coupled receptors and modulate the immune function indirectly<sup>1</sup>

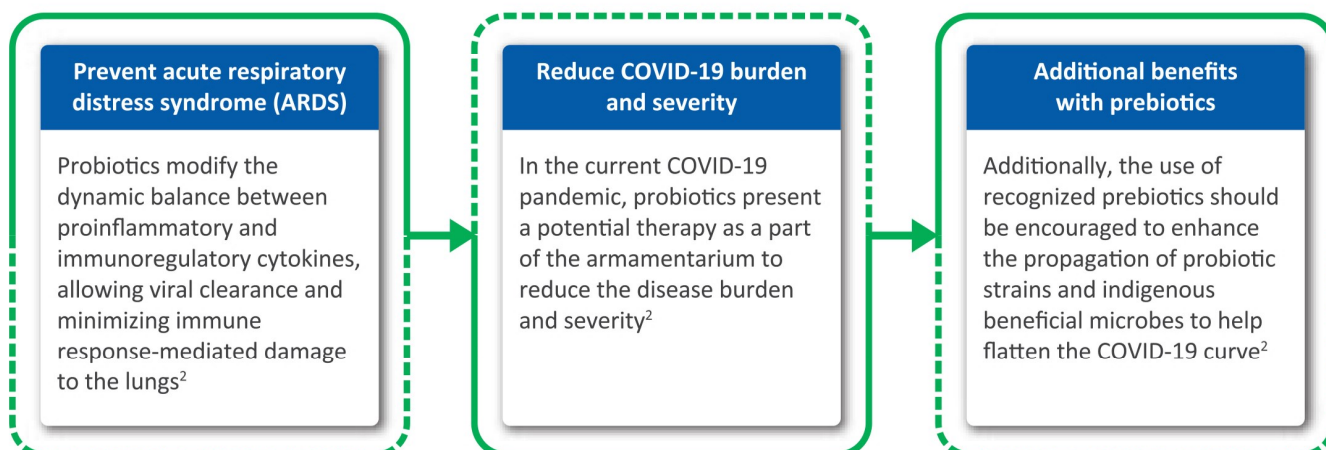
Inhibit histone deacetylases, the cell interior, and regulate gene transcription in the immune response<sup>1</sup>

Promote B-cell differentiation and antibody synthesis, improving the antibody-antigen response<sup>1</sup>

### Probiotic immune functions<sup>1</sup>:

- Act on T helper (Th) and regulatory T (TReg) cells
- Influence mucosal immune responses and T-cell differentiation by the induction of different cytokines secretion
- Induce immunoglobulin A (IgA) secretion, collaborating in maintaining immune surveillance

## Probiotics can induce protective humoral and cellular immunity in patients with COVID-19<sup>1</sup>



### In Antibiotic-Associated Diarrhea

# ViBact-DS

(Bacillus Mesentericus – 2 million, Clostridium Butyricum – 4 million, Streptococcus Faecalis – 60 million, Lactobacillus Sporogenes – 100 million)

## Synergistic combination of Pre & Probiotic



**Prebiotic:**  
Genetically Modified  
Bacillus Mesentericus (GMBM)



**Probiotic:**  
Clostridium  
Butyricum

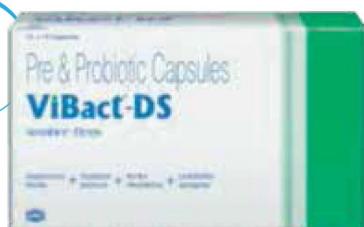


**Probiotic:**  
Streptococcus  
Faecalis



**Probiotic:**  
Lactobacillus  
Sporogenes

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### Benefits of Vibact DS

- Can withstand gastric acid pH as low as 1.2<sup>3</sup>
- Promotes the growth of Bifidobacterium species<sup>4</sup>
- Improves stool consistency and frequency in diarrhea<sup>5</sup>
- Stimulates the mucosal immunity<sup>6</sup>

**References:** 1. Morais AHA, Passos TS, Maciel BLL, da Silva-Maia JK. Can Probiotics and Diet Promote Beneficial Immune Modulation and Purine Control in Coronavirus Infection? *Nutrients*. 2020;12:1737. 2. Baud D, Agri VD, Gibson GR, Reid G, Giannoni E. Using Probiotics to Flatten the Curve of Coronavirus Disease COVID-2019 Pandemic. *Front Public Health*. 2020;8:186. 3. *Br. J Nutr* (1998) 80 Suppl S 147-S171 4. *Microbios*. 2000;101 (399):105-14 5. *Scientific Reports* | (2008) 8:2964 | DOI:10.1038/s41598-018-21241-z 6. *CRITICAL REVIEWS IN FOOD SCIENCE AND NUTRITION* 2018, VOL. 58, NO. 10, 1660-1670

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