

INTRODUCTION

The recent ongoing global pandemic Covid-19, SARS-CoV-2, was identified as a highly contagious and infectious disease. SARS CoV-2 infections pathogenesis is based on the increased production of inflammatory cytokines, leading to multiple organ injury, organ failure and subsequent death.

This viral disease is associated with some non-classical symptoms affecting other organs such as gastrointestinal infections (GIT) and diarrhea along with ulcerative colitis. The virus enters the lungs where the spike glycoprotein of the virus binds to ACE-2 on cells, allowing the virus enter the cells. Some trans membrane proteinases such as trans membrane protease serine2 (TMPRSS2) and a disintegrin metalloproteinase domain17 (ADAM17) also participates in this process. SARS CoV-2 can use TMPRSS2 for spike protein priming in cell lines. The infected cells and inflammatory cells stimulated by viral antigens can produce pro-inflammatory cytokines (PICS) and chemokine's to activate immunological reactions and inflammatory responses to combat the viruses. Cell free and the viruses, cell-free and macrophage-phagocytized viruses in the blood can be transmitted to other organs and infect ACE-2 expressing cells at local sites(Fig.1).

Around 58%-78% of patients suffering from covid-19 were treated with antibiotics of which 2%-36% of patients suffered from diarrhea. Similarly, 30% of patients with the mild east respiratory syndrome(MERS) and 10.6% of SARS CoV-1 patients have been found to suffer from diarrhea. Moreover 30% of patients with IBD and SARS CoV-2 required hospitalization, the death rate being 3%.

Probiotics are live microorganisms or dead bacteria that are safe and free of vectors. Strains of diverse micro biota likewise bifid bacterium, lacto bacillus, enterococcus and streptococcus are widely used as probiotics for the amelioration of GIT associated disorder including acute, nosocomial and antibiotic-associated diarrhea and inflammatory bowel diseases. On the other hand richness of clostridium hathewayi, clostridium romosum, caprobacillus were positively co-related with the severity of the diseases(Fig.2).

Bacteriocins are the peptides composed of 30-60 cationic amino acids with anti microbial properties targeting energized membrane vesicles to destruct the proton – motive force(Fig3).

EXPERIMENTALS

Probiotics play their role in combating various diseases in terms of enhancing epithelial barrier function, as anti-inflammatory improving gut microbial diversity, as a antagonist, for various harmful bacterial strains in the gut. It is expected that supplementation with appropriate probiotics may colonize the gut with the selected therapeutic bacterial strain, which can then spread to other parts of the body or extra digestive sites and may enhance immunity against viral infections. It is assumed that perhaps these probiotics microorganisms or their metabolites are engulfed directly by dendritic cells (DC) and macrophages through the intestinal lumen by penetrating into the intestinal epithelium, thereby transporting bacteria to the other areas via blood stream, as in the case of covid-19 may exhibit its effects in multiple organ failure.

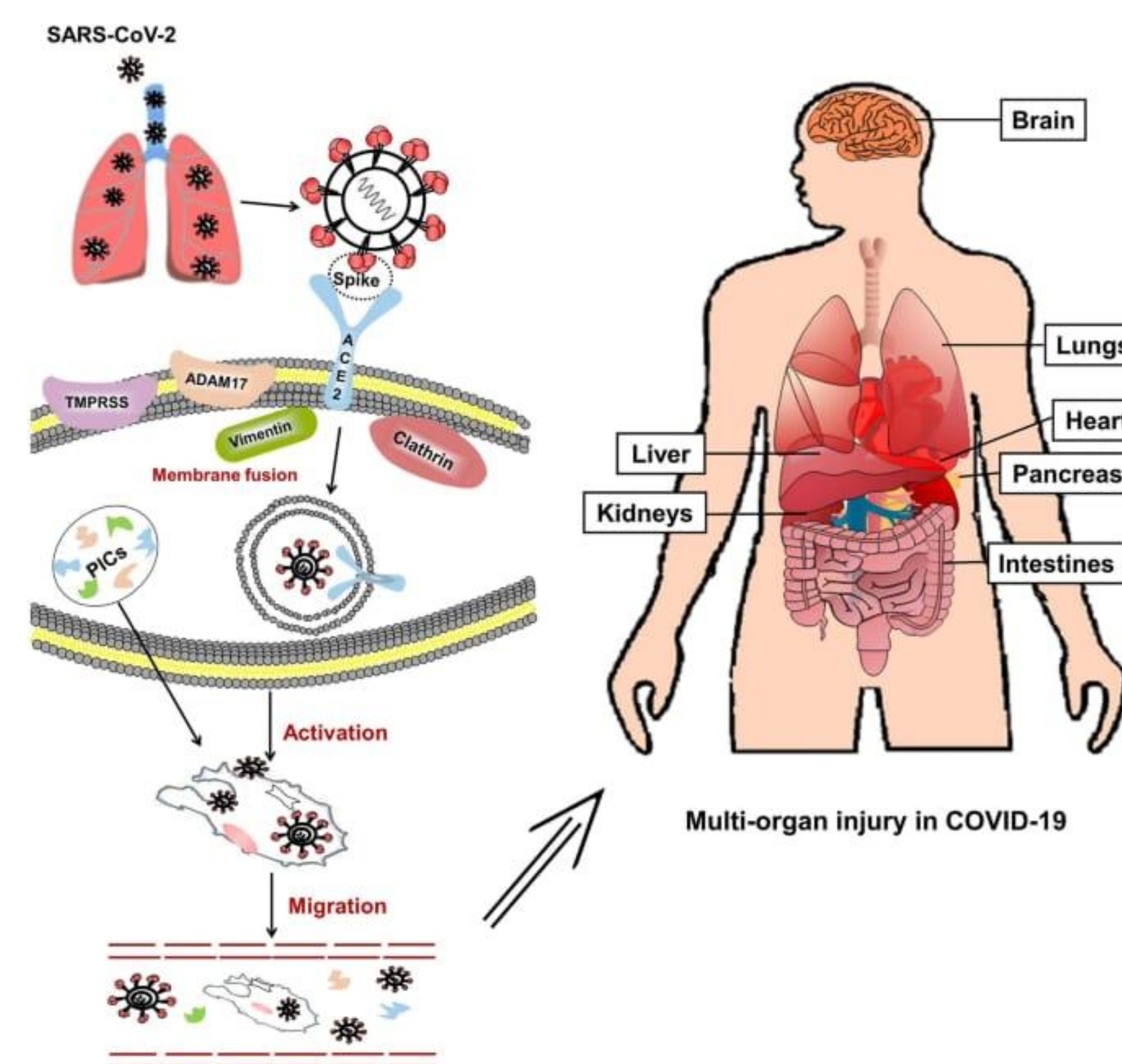


Fig.1. SARS CoV-2 enters lungs cells via the ACE-2 receptor. The cell- free and the macrophage phagocytized virus spreading to other organs and causes multiple organ INJURIES.

RESULTS & DISCUSSION

Most hospitalised individuals rely on corticosteroids, antibiotics, and antiviral for systematic inflammation and associated organ injury. Besides, patients with severe disease conditions in ICU associate with increased gut microbial dysbiosis, IBD and colitis leading to an increased death rate. Additional, disease management with the inclusion of microbial diversity screening as a routine test in infected individual and subsequent therapies with either probiotic, dietary fiber, prebiotics, or other supplements as food additives for micro biome improvement as well as alleviating GI symptoms might be useful in lessening inflammation, enhancing immune response, improving gut barrier function. To date, there are ongoing clinical trails, but there are no or limited clinical trails with concluding outcomes to pave the way for specific probiotics strain use in SARS CoV-2 infection. There is a need for prompt studies and trails for probiotics use in Covid-19. There is enough evidence to consider probiotics in therapies such as dietary interventions, symbiotic and prebiotics as supplement treatment.

REFERENCES

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- 2 FONTANA L., Bermudez Brito M., Gil. A .characterization and evaluation of probiotics. (2020). PM id: 23360880.

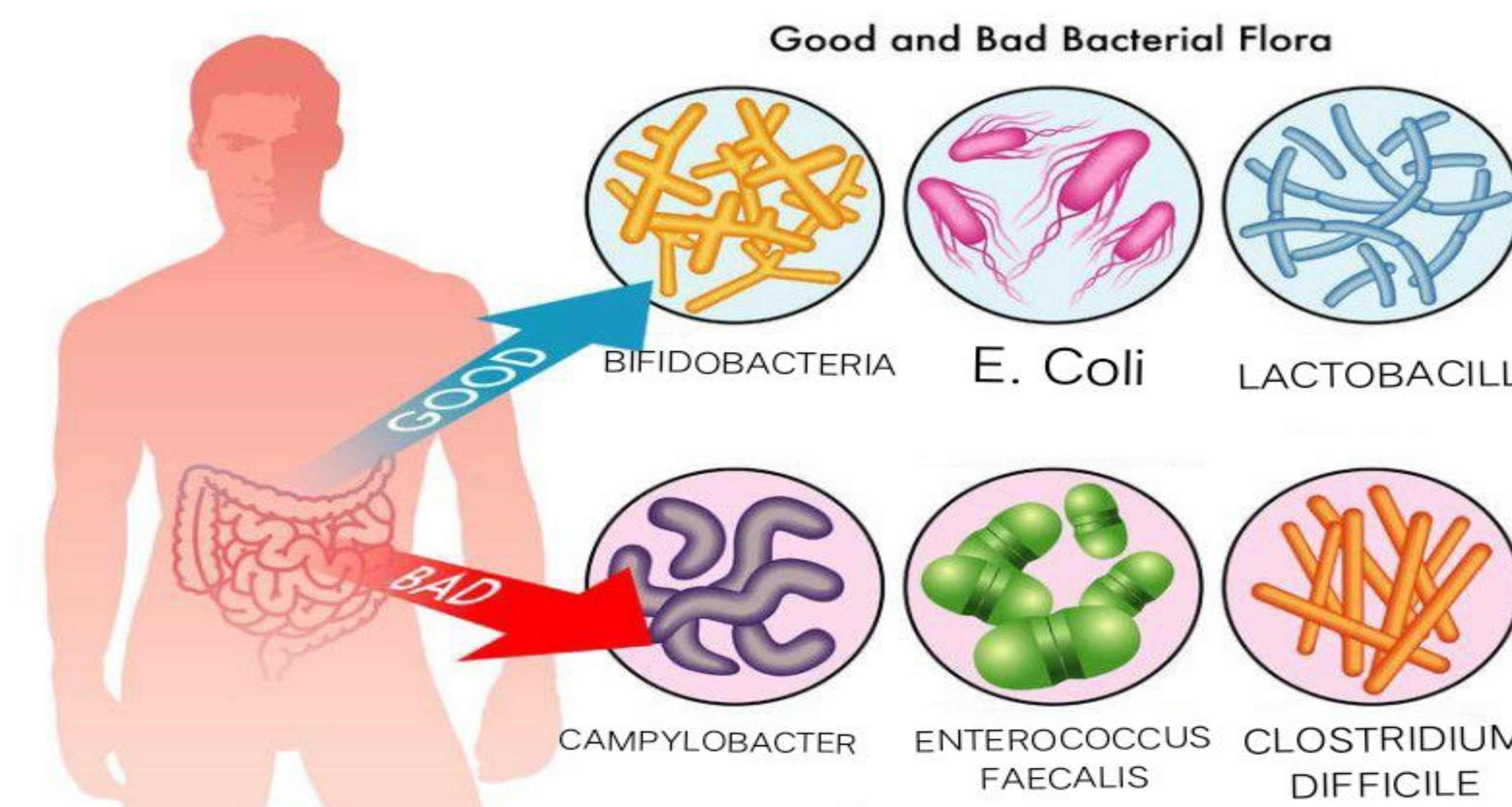


Fig.2 good bacteria and bad bacteria.

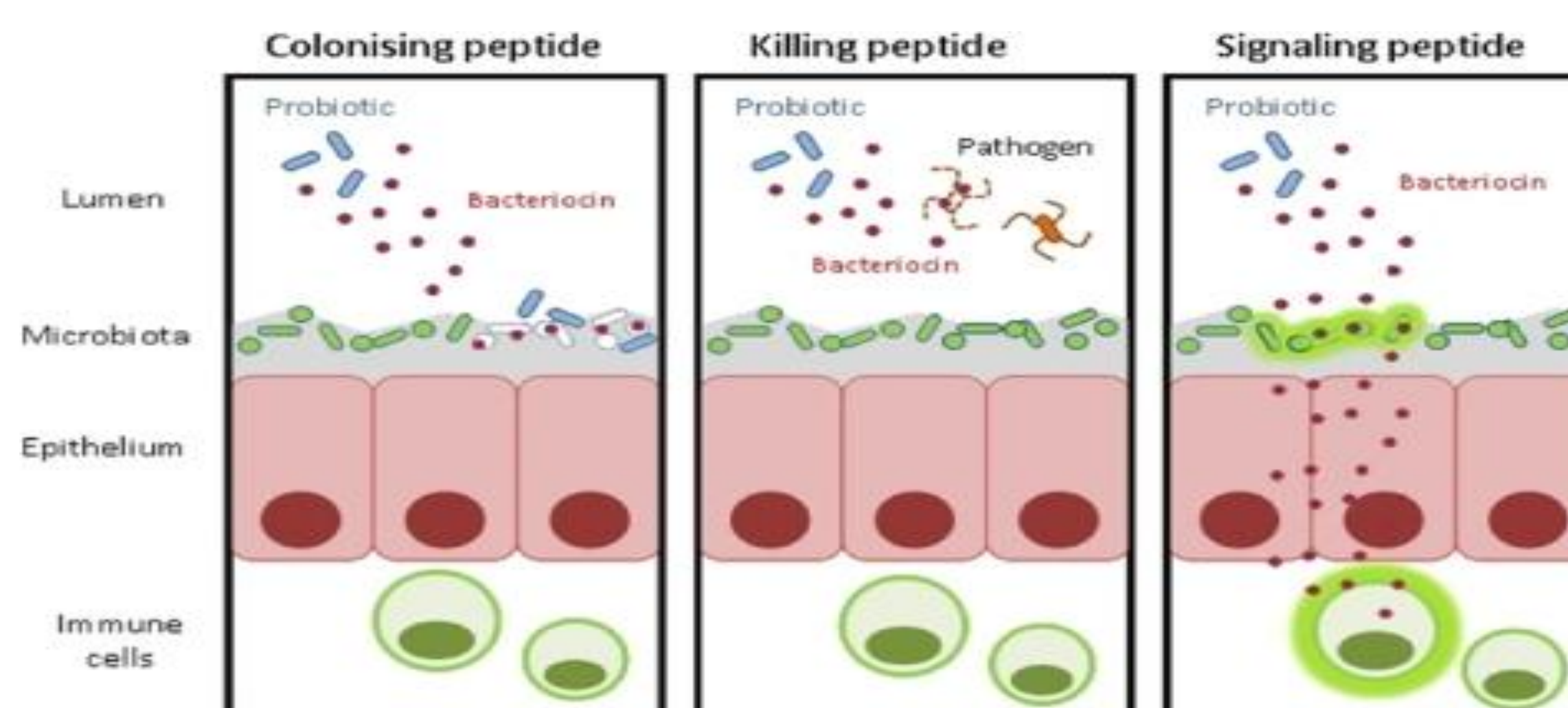


Fig. 3. Mechanism via which Bacteriocins production contributing to probiotic

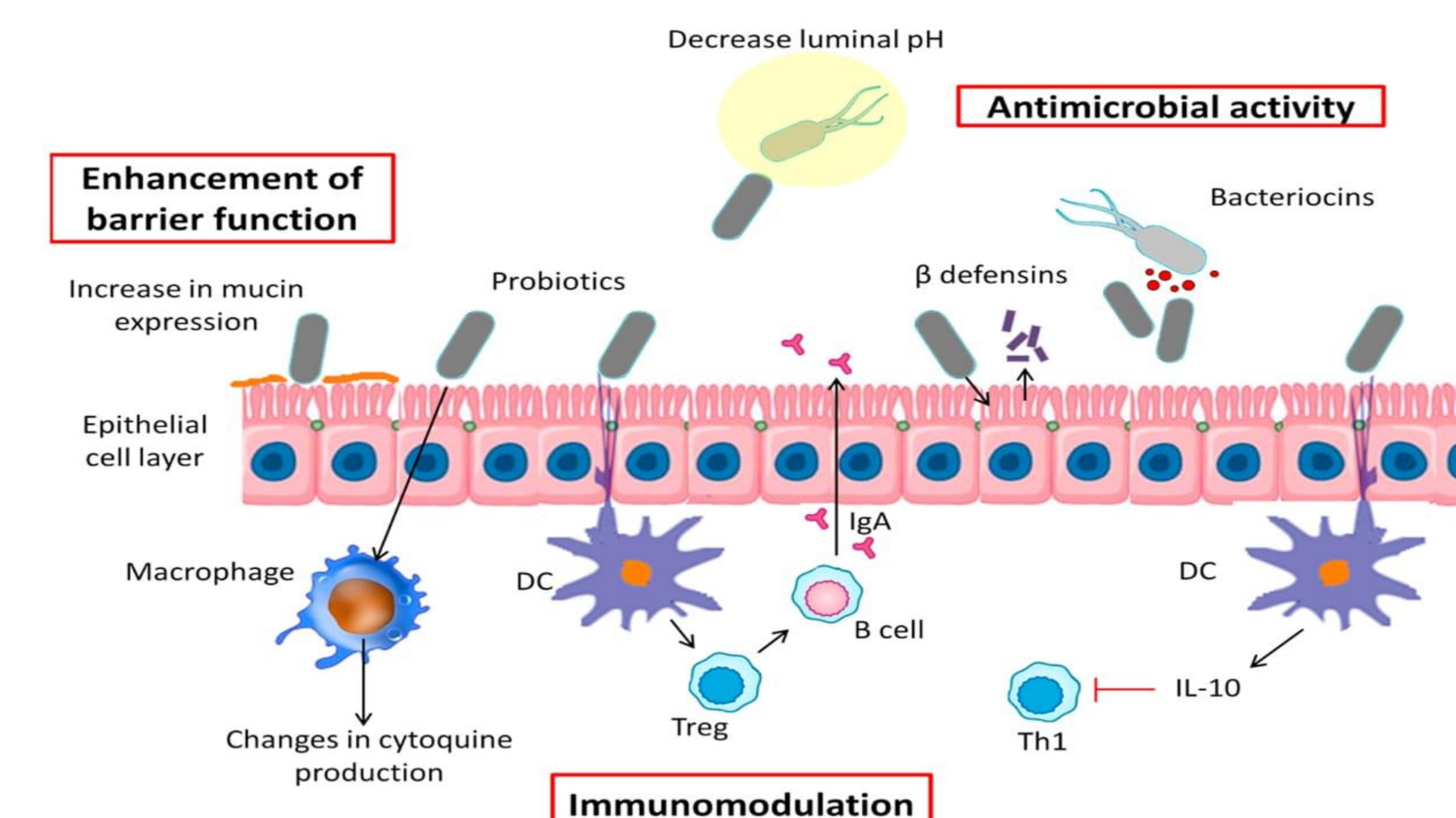


Fig. 4 Probiotics mechanisms of action.