

A Commentary on Mechanism of Action and Types of Synbiotics

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DESCRIPTION

Synbiotics are defined as a mixture of probiotics and prebiotics that beneficially affect the host by improving the survival and activity of beneficial micro-organisms in the gut. Examples such as Bifidobacteria and Fructooligosaccharides (FOS), *Lactobacillus rhamnosus* GG and inulins, Bifidobacteria or *lactobacilli* with FOS or inulin's or Galactooligosaccharides (GOS).

Synbiotics are the products in which the prebiotics compound selectively favors the growth of probiotics and their metabolite production. Recent studies have shown that by harnessing the benefits of these prebiotics and probiotics into synergy, the number of bacteria in the digestive systems increases many fold times for the betterment of health. Synbiotics effects can occur in two ways:

- By improvement in the hosts health after ingestion of a mixture of prebiotics and probiotic strains.
- By the promotion of indigenous beneficial micro flora such as bifidobacteria after ingestion of prebiotics alone.

Design criteria for synbiotics

If the specific properties that a prebiotic will require to be beneficial to the probiotic are determined, then select the prebiotic accordingly. An appropriate probiotic and prebiotic should be selected while composing a synbiotics; then the prebiotic used should have an enhancing role on the probiotic microorganisms; and the prebiotic should particularly augment the growth of microorganisms in probiotics.

Probiotics promote specific, desired effects on the host, safe and are impermanent. Prebiotics selectively promote the growth of beneficial bacteria. These can be present in the host or introduced with the probiotic. Prebiotics should not cause harm.

These do not have to be carbon substrates. Synbiotics should have greater effect than the prebiotic or probiotic alone.

Mechanism of action of synbiotics

- Modulation of the metabolic activity in the intestine along with maintenance of the intestinal bio structure, development of beneficial micro biota and the concomitant

inhibition of potential pathogens present in the GI tract.

- As a result, a reduction in undesirable metabolites plus inactivation of nitrosamines and carcinogenic substances occurs.
- This further leads to positive effects on the host's health as a result of increased levels of SCFAs, ketones, carbon disulfides and methyl acetates.

Types of synbiotics

These are of 2 types namely complementary synbiotics and synergistic synbiotics.

Complementary synbiotics comprises of a probiotic and a prebiotic (more than one of each can be used), working independently to achieve one or more health benefits. The study does not need to demonstrate selective utilization as this has been previously demonstrated by the prebiotic.

A synergistic synbiotic is composed of a live microorganism and a selectively utilized substrate and these components are designed to work together. The study must demonstrate both selective utilization and a health benefit.

Functions of synbiotics

- Improves the absorption of vitamins and trace elements.
- Normalizes the intestinal micro flora.
- Destroys pathogens and strengthens immunity.
- Improves skin condition and digestion.
- Prevents diarrhea and constipation.
- Prevents the seasonal infectious diseases.
- Reduces the symptoms of lactose intolerance.

Applications of synbiotics

- Designing synbiotics for improved human health.
- Improving gut health in poultry.
- Current application of synbiotics in aquaculture.
- Microencapsulated synbiotics are used in fruit-based beverages.
- Synbiotics also cause the lowering of the amount of undesirable metabolites, as well as the inactivation of nitrosamines and cancer genic substances.

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