In Saccharomyces cerevisiae there are two major polysaccharides constituting up to 90% of the cell wall dry weight. They are the mannan and beta-glucan, which have remarkable properties to interact with the immune system of the host.

The exact mode of action and properties of yeast cell walls have not been fully understood but are believed to be related to improvements in resistance against enteric infections and modulation of immunity. Yeast cell walls appear to improve gut health by inhibiting colonization of enteric pathogens by blocking their binding sites in gut cells. Yeast cell walls also seem to enhance immunity by stimulation of immune cell function, upregulation of cytokines, and antioxidant activity.

Another property of yeast cell walls is the toxin-binding capacity, which is mainly explored as mycotoxins adsorbents.

This same process of “attachment and displacement” is applicable in all species of livestock including cattle and poultry diets. Its universal approach also means that it can be used in any phase of production where the producer feels that losses are occurring from enteric challenges. Yeasts are truly a universal ingredient with a wide range of applications and dosing approaches. Yeast products are used in pelleted feed, mash feed, milk replacers, and top dresses just to name a few.

Weaning is the most important stress in the pig farming industry, and it deeply affects gut health and the immune system. During the first weeks after weaning, piglets need to adjust to solid feed. As a consequence, weaning may result in decreased feed intake, and piglets may undergo serious diarrhea and immune dysfunction. In weaned piglets, environmental factors can also result in oxidative stress. When the environment changes, the balance between oxidation and antioxidation is disturbed, resulting in mass production of reactive oxygen species (ROS) in the body, eventually leading to oxidative stress. It should be noted the oxidative stress occurs in every species of livestock.
and is multifactorial in origin. Heat prostration in broiler barns for example causes increased oxidative stress. Something as simple of calves being dehydrated causes this same effect. Yeasts are often used in antibiotic free production systems to mitigate such adverse affects of stress.

B-Glucans are capable of activating the innate immune system, thereby reinforcing defense barriers and preventing pathogen infection. Some studies report that the polysaccharides in yeast cell wall have been used against various bacterial infections and yeast, fungal, viral, and parasitic diseases.

Given the health benefits of yeast cell walls, they are currently one of the most important natural feed additives that are widely used as antibiotic replacers.⁴

As shown; Enterobacterium with fimbriae. The fimbriae are the point of contact with the yeast components.

2 - (Kogan and Kocher, 2007)
4 - Spring, et al., 2015; Credence Research, 2018