

Postbiotics: The new kid in the gut health family

May 25 2023, by Senaka Ranadheera



Credit: Pixabay/CC0 Public Domain

When it comes to our health, most of us have heard of prebiotics and probiotics and know something about their benefits to our digestive system (even if it's hard to tell them apart), but what about postbiotics?

To recap, [probiotics](#) are the live microorganisms or "[good bacteria](#)" that we consume in our diet to establish a healthy [gut microbiota](#)—the entire collection of trillions of bacteria that normally live in the intestines.

Probiotics such as Lactobacillus and Bifidobacterium, also known as [lactic acid bacteria](#), are found in fermented foods including yogurt, sauerkraut, some cheeses and certain fermented beverages, as well as dietary supplements.

Prebiotics are what the probiotics feed on, primarily the undigestible plant materials in our diet including fibers that only can be used by the probiotics and gut microbiota.

Fruits including bananas and apples, vegetables such as Jerusalem artichokes, leek and asparagus, onions, garlic, and also certain cereals, nuts and legumes are rich in prebiotic compounds.

Certain combinations of probiotics and prebiotics can be used together to boost the beneficial effects of probiotics when consumed, and these are known as synbiotics.

So what are postbiotics?

As their name may suggest, postbiotics are what are generated after the digestion of certain foods. They are the breakdown products or 'metabolites' following the digestion of prebiotics and fiber-rich compounds by probiotics and our gut's resident microbiota.

The colon, the lower part of our [digestive system](#) is where many postbiotics are produced, as the microbiota and food we eat go through a phase called colonic fermentation in the colon.

One of the important things that happen during colonic fermentation is

the breakdown of non-digestible prebiotic and fiber substances in our diet by gut microbiota. This produces beneficial compounds for our health like short-chain [fatty acids](#), certain vitamins (Vitamin B and K), [amino acids](#) and antimicrobial peptides that prevent the growth and activities of harmful bacteria.

Even some carbohydrate substrates known as secreted polysaccharides and exopolysaccharides produced by these bacteria provide various beneficial effects, and so are considered postbiotics.

But because the concept of postbiotics is relatively new, the process of defining them is still a work in progress. In [our article](#) *Nature Reviews Gastroenterology & Hepatology*, we discuss the definition of probiotics and their importance in enabling consumers to understand which products have health-promoting properties.

Benefits of postbiotics

Generally, postbiotics can provide us with similar benefits to that of probiotics and prebiotics.

But the beauty of postbiotics is they can provide these benefits even without any side effects that probiotics and prebiotics may have. For example, some people might experience discomfort because of a temporary increase in gas and bloating after intake of probiotics and prebiotics.

So you can take postbiotics as supplements if you cannot tolerate them or you do not like consuming probiotics and prebiotics.

One of the well-known benefits of postbiotics is their ability to shift our gut microbiome towards a healthy composition. Research has shown that beneficial postbiotic compounds can support the growth, activities and

functions of probiotics and gut microbiota.

It is more like a boosting effect, so that our gut microbiota, which plays a crucial role in our overall health, can fight against pathogenic microorganisms like Salmonella in our body. As we know healthy gut microbiota keep us healthy as they can positively influence our overall health.

Postbiotics can also stimulate our [immune system](#) as well. For example, exopolysaccharides produced by *Lactobacillus delbrueckii* ssp. *bulgaricus*, one of the starter culture bacteria used to produce yogurt, have the ability to enhance the activity of the body's [natural killer cells](#).

Similar positive effects on the immune system were shown in a recent study where researchers used exopolysaccharides produced by *Lactiplantibacillus plantarum* isolated from human breast milk.

Postbiotic short-chain fatty acids produced by the digestion of fiber-rich plant foods can also lower the risk of colon cancer. They are considered cancer-protective metabolites. Some positive effects of postbiotics on breast cancer patients have also been shown.

It is still early days for postbiotics research, with most of these studies being cellular-based lab experiments or performed on animals. However, their applications in humans are promising.

Are dead probiotics beneficial?

For beneficial [probiotic](#) effects, they must be live when consumed and travel through our gut. But recent research shows that even if you completely remove the probiotic cells from its growth medium, for example, the food source the probiotics are grown in, the cell-free source can still produce some positive effects including boosting the

immune system.

This appears to be because some postbiotics produced by these probiotics when they are in food remain even if you remove all living probiotics. For example, some exopolysaccharides and vitamins remain active and do not degrade in the food before we consume them.

Some dead probiotics and their cell components have also been shown to provide beneficial effects. But much more research needs to be done in this area.

How to harness the benefits of postbiotics

As the field of probiotics is still growing, there will be a lot more to discover in the coming years.

For now, the best thing we can do for gut health is to consume probiotic-containing foods like yogurt and sauerkraut because they contain both the postbiotics that have been produced during processing and storage as well as the living probiotics, which will continue to release more postbiotics in the gut.

Including [prebiotic](#)-rich plant foods in the diet will then add to these health benefits, providing the [food](#) for probiotics as the first step towards a healthy gut microbiome.

Provided by University of Melbourne

Citation: Postbiotics: The new kid in the gut health family (2023, May 25) retrieved 18 April 2024 from <https://medicalxpress.com/news/2023-05-postbiotics-kid-gut-health-family.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.