



COVID-19: A Game Changer for Probiotics

An overview of how the pandemic has impacted post-purchase consumer engagement with probiotics, the role of probiotics in defending against infections and opportunities in the market.

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COVID-19 – A Game Changer for Probiotics

The global COVID-19 pandemic is profoundly altering consumer behaviour and this includes consumers' preferences regarding the foods, beverages and dietary supplements they choose. Health and wellness has been an important macro trend shaping the industry for decades, but the current crisis situation has elevated consumers' desire to stay healthy and free from infection to top priority status.

To ward off COVID-19, consumers are looking for immunity boosting foods, beverages and supplements. Based on search data from Google Keyword Planner, keyword searches for probiotics and immunity increased by almost one third year-on-year (November 2019 - November 2020). Probiotics are the obvious go-to product here, firmly associated as they are, by now, in consumers' minds with boosting the body's resistance to infections.

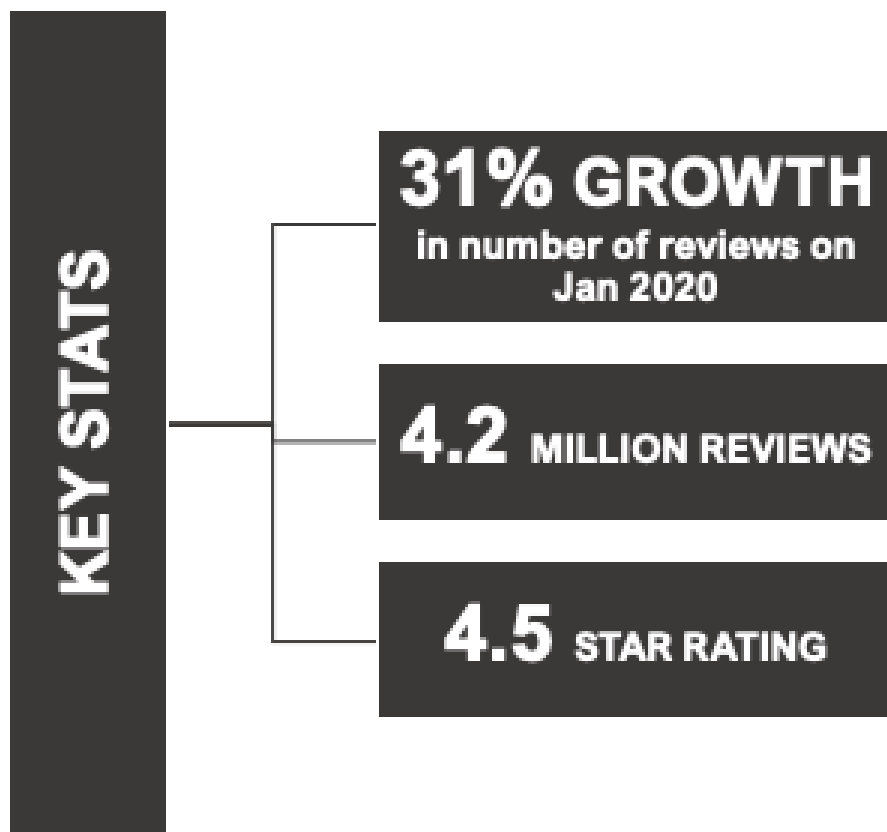
Immunity, however, is only part of a much bigger picture. There are multiple health factors known to heighten the risk of severe COVID-19, such as advanced age or cardiovascular disease. And there are also health issues resulting from the adverse economic and social impacts of this drawn-out situation, such as stress and anxiety-related disorders. Probiotics are potentially relevant to a wide spectrum of these associated issues, and combined with consumers' rising online engagement with probiotic products, this is paving the way towards a sea change for the probiotics industry.

Probiotics generate enthusiastic consumer engagement

Our research shows that consumers' online engagement with probiotics continues to strengthen. Lumina intelligence captures 1404 brands (giving rise to 3107 SKUs) belonging to 1191 global and 1249 national brand owners across 25 markets. We observed that consumer reviews of probiotic products, including supplements, juice and kombucha, rose by nearly one third in the first half of 2020, as the pandemic took hold, equating to 4.2 million reviews worldwide.

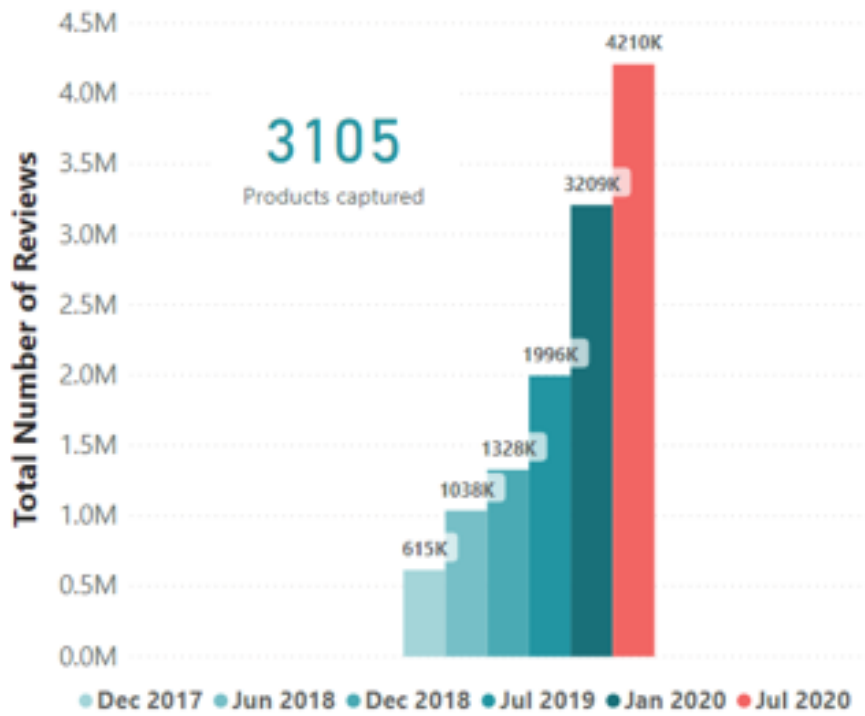
In terms of reviews by country markets, China is in the lead, having generated over 3 million reviews by July 2020, representing an increase of 23% in the first half of 2020, followed by South Korea (463K reviews) and the US (307K reviews) in third place. In terms of growth, India delivered the most remarkable growth of 468%. In European markets like France, Germany and the UK, reviews increased by around 150%.

Probiotics, 25 countries, Jul 2020



Source: Lumina Intelligence

Probiotics – growth in the total number of reviews (2017-2020)



Source: Lumina Intelligence

Probiotic supplements reviews by region, 25 countries, 2020



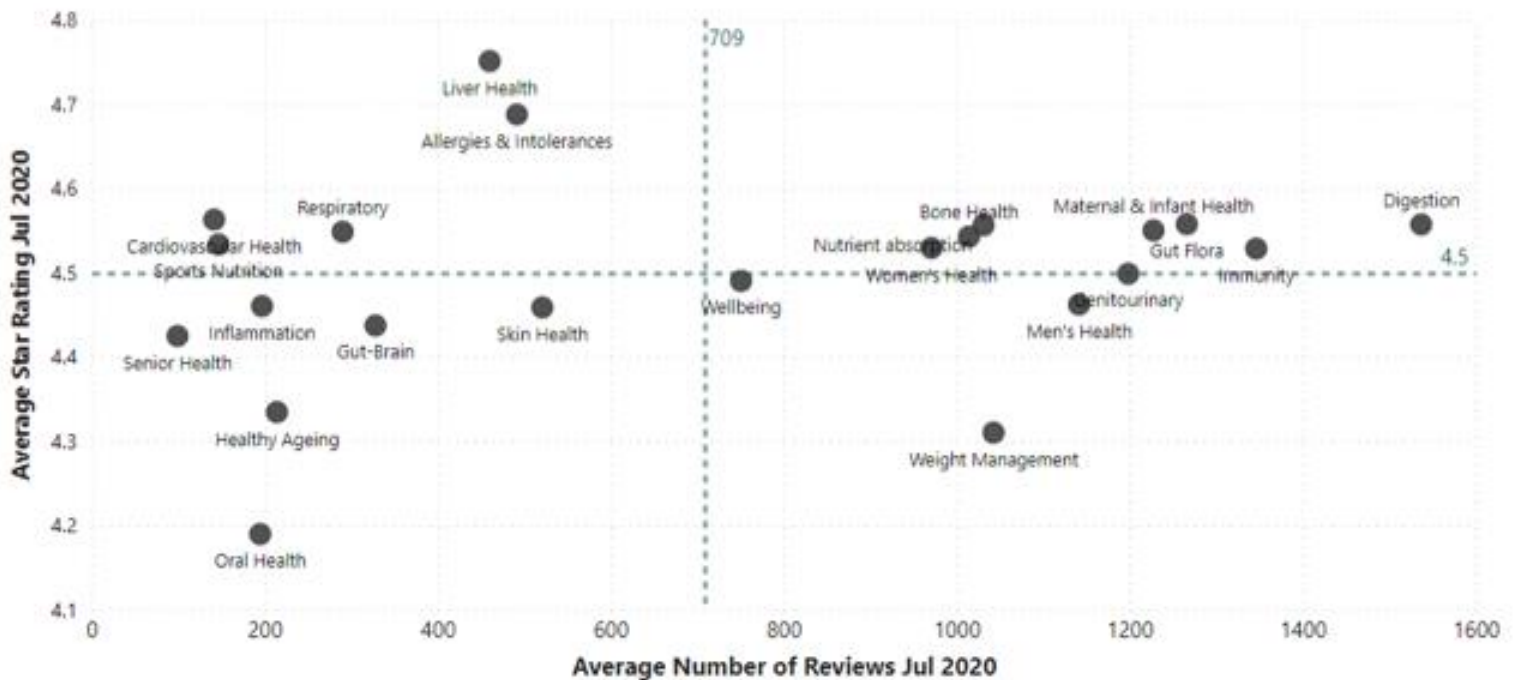
Source: Lumina Intelligence

Immunity draws consumer attention

As evident from the graph below, digestion and immunity are the most established health benefits drawing consumer attention in the online space, garnering the most reviews, on average, across 25 markets and also scoring above 4.5 (out of 5.0) in terms of star ratings. Immunity also emerged as the 7th fastest growing health benefit by reviews.

Other relevant positionings in the broader COVID-19 context, as we shall be discussing in a little more detail shortly, like inflammation, respiratory health, senior health and those relating to chronic disease, like cardiovascular health, are still very much behind where numbers of reviews are concerned.

Average number of reviews and star rating by health benefit, January 2020



Source: Lumina Intelligence

Sub-optimal microbiota equals more severe COVID-19

Let's take a brief look now at some research concerning COVID-19 and the potential implications for probiotics.

Viruses are responsible for over 90% of respiratory tract infections (RTIs). A number of studies suggest that probiotics aid in the prevention of RTIs. A meta-analysis published in May 2020 of 12 randomized controlled trials showed a small but significant reduction in disease severity of infected subjects, for example. Among the strains identified as potentially beneficial are *Lactobacillus gasseri*, *Bifidobacterium longum* and *Bifidobacterium bifidum*.¹

As is also commonly the case with influenza viruses, SARS-CoV-2 infection is not just limited to respiratory system, but can affect the digestive tract. Around half of those infected experience digestive symptoms like diarrhoea, nausea, vomiting and abdominal pain. There is evidence that an atrophied or disturbed microbiome (dysbiosis), both of the gut and the lung/airways, negatively affects the course of the disease.^{2,3} Elderly individuals and those with chronic disease are known to have suboptimal microbiota compositions, and it has also been observed that the administration of antibiotics, which wipes out not just pathogenic bacteria but most of the commensal microflora as well, typically results in a much more grave evolution of respiratory infections.⁴

The Gut-Lung Axis

The pathways through which the gut microbiota influences the course of infections that implicate the respiratory system are still in the process of being elucidated. One way in which these apparently distant systems communicate with each other appears to be via microbial metabolites produced at both sites travelling through the blood stream. This is often described as the gut-lung axis, and it is believed to influence the regulation of the immune response triggered by the presence of SARS-CoV-2 in the body.^{4,5}

Inflammation is the immune system's habitual response to infection. It occurs as the body transports large quantities of white cells and a number of inflammatory mediators, like cytokines and chemokines, to the site of infection in order to eliminate the pathogens. This is evidenced by the swelling and redness characteristic of inflammation. Ironically, it is this inflammatory process, which can cause acute respiratory distress syndrome (ARDS), blood clots and multiorgan failure. It is these complications, which are largely responsible for COVID-19 fatalities.⁶

Besides enhancing the body's defences against infection, another avenue in which probiotics may be useful in the battle against COVID-19 is by counteracting the dreaded "cytokine storm," a term that refers to the massive release of cytokines into the tissues, a trigger for ARDS. Preliminary (but by no means conclusive) evidence suggests that probiotic species like *Weissella cibaria*, *Lactobacillus paracasei*, *Lactobacillus plantarum* and *Lactobacillus reuteri* may have anti-inflammatory properties that could be employed against this undesirable excess of inflammation.⁷

At present, probiotic supplements positioned as ameliorating inflammation are primarily aimed at people suffering from inflammatory bowel disorders. Products marketed as having a more systemic anti-inflammatory effect, and/or curbing the excessive release of cytokines, have not yet managed to carve out a niche for themselves. This could well change in the near future.

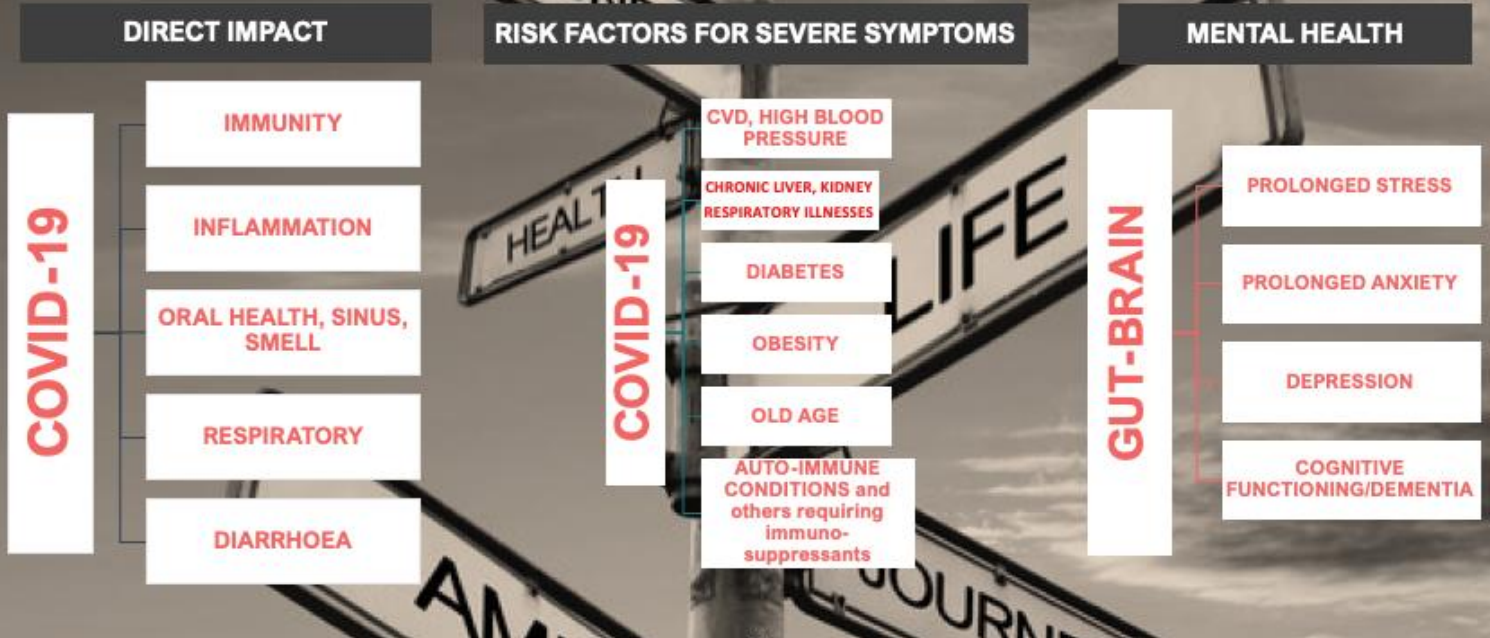
Chronic disease & mental health linked with the pandemic

In addition to immunity and inflammation, there are a wide range of health issues that pre-dispose people with COVID-19 to suffer severe acute symptoms and/or long-term adverse health consequences for many weeks or months after the virus itself has been killed off by the body. Among these pre-disposing factors are fairly common underlying health conditions, like cardiovascular disease (CVD), hypertension, diabetes, obesity, chronic respiratory diseases like asthma, autoimmune conditions requiring treatment with immunosuppressive drugs, cancers and many more.

Probiotics, whose impacts are not just limited to the digestive tract, but which exert their effects in a systemic way throughout the body, may indeed prove useful in the prevention and management of many chronic illnesses, as well as in the area of mental health issues.

The constant fear of infection, for example, can provoke chronic anxiety, and the ongoing stress arising from the multitude of restrictions imposed on people's daily lives can be seriously detrimental to emotional wellbeing. As a consequence, we are now starting to observe a rise in mental health issues. A meta-analysis published in January 2021, for example, which looked at twelve studies on the matter, concluded that the global incidence of depression had increased seven-fold since the outbreak of the pandemic.⁸

Consumers search for probiotics in fight against COVID-19



How can probiotics mediate mental health? As already illustrated with the example of the gut-lung axis, distant body systems as well as microbes residing in different parts communicate with each other. We know that the central nervous system (which consists of the brain and the spinal cord) and the gastrointestinal tract are also engaged in a non-stop conversation with each other. This interconnected system is termed the gut-brain-axis (GBA). Our understanding of the precise workings of this communication is still in the early stages, and it seems to involve hormones, neurotransmitters and microbial metabolites, like short chain fatty acids (SCFAs). There appear to be three main pathways of communication: the endocrine pathway, the nervous pathway and the immune pathway.⁹

Low levels of the neurotransmitter 5-hydroxytryptamine, aka serotonin, in the brain are associated with mood disorders such as depression, anxiety and sleep problems. As a matter of fact, both serotonin and serotonin receptors are much more ubiquitous in the gut than in the brain, and intricately involved with the regulation of the GBA.¹⁰ A recent review came to the conclusion that probiotics, including *Lactobacillus casei* (Shirota strain), appeared to alleviate depression, mediated by the GBA.¹¹

Over the past few years, we have been witnessing the emergence of “psychobiotics,” a novel class of drugs based on probiotics designed to synthesise and deliver neuroactive substances for the treatment of psychiatric illnesses. The pandemic is expected to further exacerbate mental health issues, in particular stress-related and anxiety disorders, which should boost the development of psychobiotics and dietary supplements positioned as modulating the GBA.



Supplement Facts		
Serving Size: 1 Capsule / Servings Per Container: 30		
	Amount Per Serving	%DV
Total Probiotic Cultures	46 mg (6 billion CFU¹)	**
<i>Lactobacillus helveticus R0052</i>	18 mg (2.7 billion CFU ¹)	**
<i>Lactobacillus plantarum UALp-05™</i>	17 mg (2 billion CFU ¹)	**
<i>Bifidobacterium longum R0175</i>	6 mg (0.3 billion CFU ¹)	**
<i>Lactobacillus brevis UALbr-02™</i>	5 mg (1 billion CFU ¹)	**

**Percent Daily Value (DV) not established.

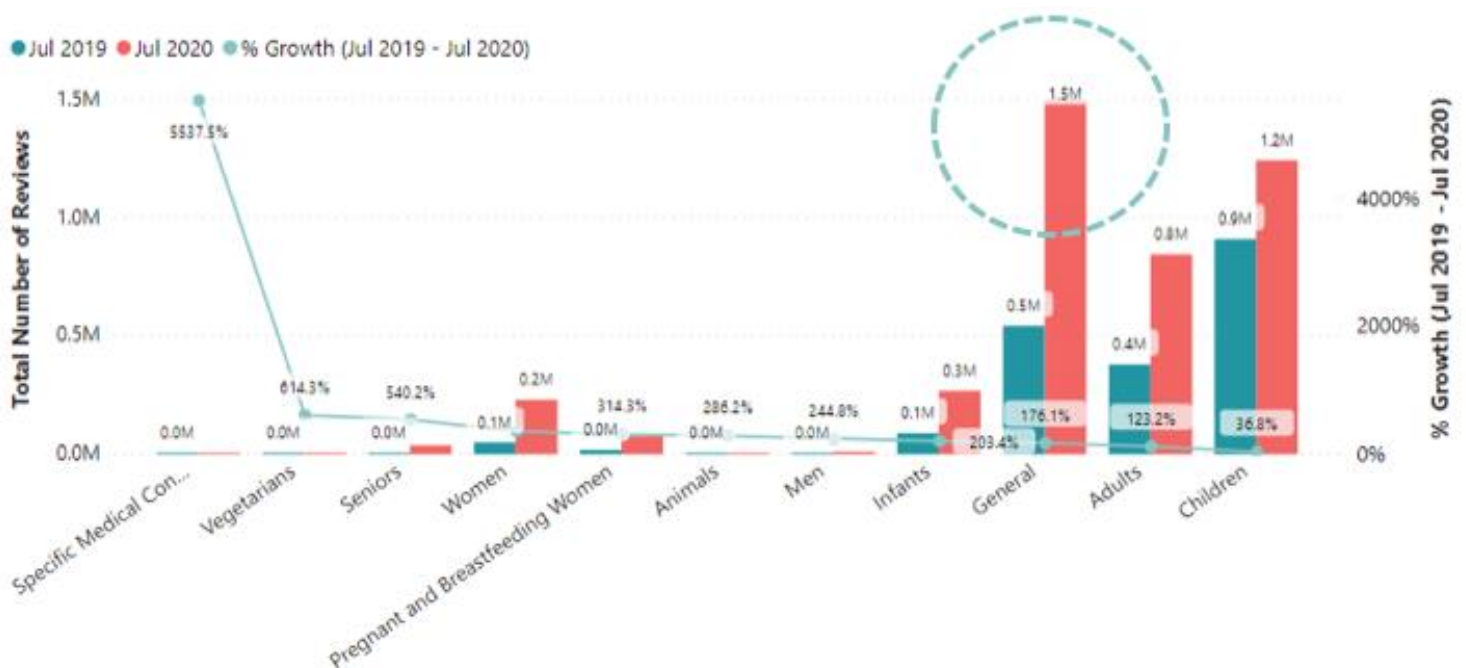
Brainbiotic, by Natural Stacks, is an example of a probiotic supplement targeting the GBA for multiple benefits, including stress relief and cognitive functioning.

Source: naturalstacks.com

Clear gaps in target population positioning

Let's now return to the topic of consumer engagement, this time with a focus on how probiotic products manage to capture the attention of various different target groups. As evident from the graph below, probiotics for the general population generate most reviews, amassing over 1.5 million globally in July 2020. This is expected, since most products are wellbeing positioned, which, in great part, is the result of restrictive regulatory environments where health claims are concerned.

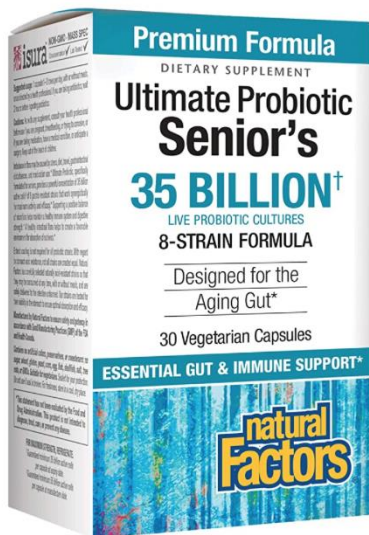
Probiotics by target population, total number of reviews (Jul 2020) and % growth (Jul 2019 to Jul 2020), 25 countries



Source: Lumina Intelligence

What emerged from our research is that it is predominantly young parents and parents to be who engaged most avidly with probiotic products positioned as relevant to them, while reviews for probiotics aimed at people with specific medical conditions and seniors were thin on the ground, as a direct consequence of such products being rather scarce.

Since a large number of medical conditions, as aforementioned, are associated with severe, including lethal, COVID-19 symptomologies, and the senior demographic as a whole being considered a high risk group, the pandemic is expected to fuel a diversification of probiotic products targeted at these areas and groups.



Supplement Facts	
Serving Size 1 Vegetarian Capsule	
	Amount Per Serving
Proprietary Synergistic Blend:	
Total Active Cell Count	35 billion CFU**
<i>Lactobacillus rhamnosus</i> (HA-111) (whole cell) (human)	7 billion CFU**
<i>Bifidobacterium breve</i> (HA-129) (whole cell) (human)	5.25 billion CFU**
<i>Bifidobacterium longum</i> (HA-135) (whole cell) (human)	5.25 billion CFU**
<i>Lactobacillus acidophilus</i> (HA-122) (whole cell) (human)	5.25 billion CFU**
<i>Lactobacillus plantarum</i> (HA-119) (whole cell) (plant)	5.25 billion CFU**
<i>Lactobacillus helveticus</i> (LafiiL10) (whole cell) (dairy)	3.5 billion CFU**
<i>Bifidobacterium bifidum</i> (HA-132) (whole cell) (human)	1.75 billion CFU**
<i>Bifidobacterium lactis</i> (HA-194) (whole cell) (dairy)	1.75 billion CFU**

** Daily Value not established.
 †CFU: colony forming units

Natural Factors Ultimate Probiotic Senior's 35 Billion 8-Strain Formula, despite being promoted as "Amazon's Choice" on amazon.com, has received only 15 ratings.

Source: [Amazon](https://www.amazon.com)

Will vaccination make probiotics irrelevant?

First of all, taking preventative measures and making sure that one's body, including its immune system, are in top condition to fight off infections will never be irrelevant. And although most countries have their vaccination programmes up and running by now, immunising countries' entire populations is a very time-consuming process that will take up the whole of 2021.

Plus, we do not yet know how long a vaccination retains its effectiveness, nor what mutations of the virus might arise and whether these will remain sufficiently vulnerable to the first generation of vaccines. Then there is also the troubling fact that a not insignificant proportion of the population may choose not to get vaccinated, either due to distrust towards these vaccines which have not undergone long-term follow-up studies, or because of a general objection towards vaccinations.

Although vaccines will hopefully bring the pandemic to an end within the next couple of years, SARS-CoV-2 is unlikely to disappear completely, but probably join the line-up of endemic viruses which include the various strains of influenza viruses.¹² At the same time, consumer awareness of how probiotics can be effectively employed to remain physically and mentally healthy and resistant to disease will have taken enormous strides.

Outlook

- COVID-19 presents a watershed moment for probiotics, extending their application way beyond boosting the immune system and improving digestion – the two key areas, which consumers were already very much aware of prior to the pandemic.
- There is a gap in the market for products positioned as systemically anti-inflammatory. Preventing the immune system from generating an inflammatory response so vigorous that it may result in life-threatening symptoms presents a worthwhile area for probiotics NPD.
- Advanced age and a number of chronic diseases are linked to severe and potentially lethal COVID-19 symptoms. Fuelled by the pandemic, we expect more specialised probiotic products specifically targeted at these conditions and groups to proliferate.
- The constricting impact of the pandemic on people’s social lives, combined with the worries connected to economic uncertainty, are highly likely to precipitate a mental health crisis of global proportions. This will fuel the evolution of probiotics as gut-brain axis modulators.
- Probiotic offerings are starting to develop online communities, which is key for attracting previously not interested younger consumers. To benefit from this, brand owners need to provide platforms to encourage discussion as well as actively engage in this, e.g. by answering queries about their products. Speed is of the essence, since youngsters tend to have very little patience and will quickly buy elsewhere.

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