



# CLINICAL DATA AND RESEARCH

A clinical research reference tool for practitioners & pharmacists with complex cases of inflammation conditions in the gut that contribute to a dysfunctional immune system

FOR PROFESSIONAL REFERENCE ONLY



# ADVANCED SYNBIOTIC FORMULAS



GUTBIOME - PROTECTING YOUR TRIBE FROM THE INSIDE

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## KEY FUNCTIONS



HELP REDUCE THE OCCURANCE OF SYMPTOMS OF UPPER RESPIRATORY TRACT INFECTION



SUPPORT HEALTHY BOWEL FUNCTION & INTESTINAL HEALTH



SUPPORT & MAINTAIN HEALTHY IMMUNE SYSTEM FUNCTION



SUPPORT DIGESTION AND ASSIMILATION OF NUTRIENTS



HELP RESTORE BENEFICIAL BACTERIA DURING AND AFTER ANTIBIOTIC USE



IMPROVE DIGESTIVE SYSTEM GOOD BACTERIA GROWTH

## SCIENTIFICALLY FORMULATED TO MEET HIGH QUALITY STANDARDS

**TESTING:** We maintain quality assurance and quality control testing standards over 24 months with 6 time checkpoints, to monitor stability compliance with the Australian TGA .

**SHELF STABILITY:** Formulation methods have been carefully evaluated to account for the number of colony forming units required to maintain a stable shelf product when kept below 25°C over 24 months.



**SURVIVABILITY:** Probiotics are most effective when they reach the large colon alive. Our Synbiotic ingredients include both prebiotics and probiotics. The prebiotic acts as the food source to nourish the probiotics, allowing them to proliferate and grow before they reach the colon to keep them alive through their gut journey where they do their best work.

PROBIOTIC & PREBIOTIC DUAL SYNBIOTIC ACTION



FRIDGE FREE



FORMULATED FOR STRAIN VIABILITY & SURVIVAL



SCIENTIFICALLY RESEARCHED STRAINS



PREMIUM QUALITY STABILITY TESTED



## FREE FROM COMMON ALLERGENS



DAIRY LACTOSE



GRAINS GLUTEN



ANIMAL PRODUCTS



SULPHITES & PRESERVATIVES



SALICYLATES



COLOURS & FLAVOURS



SUGAR & SWEETENERS



TREE NUTS & PEANUTS



EGGS



SHELLFISH SEAFOOD



SOY & CORN



POTATOES

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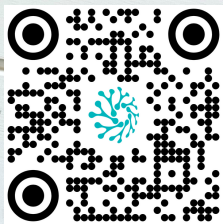
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# GUTBIOME ADVANCED SYNBIOTIC POWDER



This scientific formula helps to reduce the occurrence of upper respiratory tract infections, promote healthy bacteria growth after antibiotic use, improve digestion and bowel function and support healthy immune system function.

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PROBIOTIC & PREBIOTIC  
DUAL SYNBIOTIC ACTION



FRIDGE  
FREE



FORMULATED FOR STRAIN  
VIABILITY & SURVIVAL



18 SCIENTIFICALLY  
RESEARCHED STRAINS



PREMIUM QUALITY  
STABILITY TESTED

## INDICATIONS

- Helps reduce occurrence of symptoms of upper respiratory tract infections in healthy individuals.
- Helps maintain friendly gut flora during antibiotic use.
- Helps restore friendly gut flora after antibiotic use.
- Maintains healthy immune system function.
- Supports digestion and assimilation of nutrients
- Helps increase digestive system good bacteria growth.
- Helps restore friendly gut flora.
- Maintains healthy digestive system function.
- Supports general health and well-being.
- Helps to maintain healthy bowel function.
- Helps to decrease, reduce and relieve diarrhoea in children \*per 3 gram dose
- Helps reduce occurrence of traveller's diarrhoea.

## INGREDIENTS

Each dose contains:

### PROBIOTIC STRAIN (microorganism)

	CFU
<i>Lactobacillus rhamnosus</i> GG	10 billion CFU/g
<i>Bifidobacterium animalis ssp. lactis</i> HN019	2 billion CFU/g
<i>Bifidobacterium lactis</i> BI-04	2 billion CFU/g
<i>Lactobacillus plantarum</i> Lp-115	1.5 billion CFU/g
<i>Lactobacillus paracasei</i> Lpc-37	1 billion CFU/g
<i>Lactobacillus acidophilus</i> La-14	1 billion CFU/g
<i>Lactobacillus casei</i> Lc-11	900 million CFU/g
<i>Streptococcus thermophilus</i> St-21	600 million CFU/g
<i>Bifidobacterium infantis</i> Bi-26	300 million CFU/g
<i>Bifidobacterium bifidum</i> Bb-06	200 million CFU/g
<i>Lactobacillus delbrueckii ssp. bulgaricus</i> Lb-87	200 million CFU/g
<i>Lactobacillus brevis</i> Lbr-35	200 million CFU/g
<i>Lactobacillus salivarius ssp. salivarius</i> Ls-33	200 million CFU/g
<i>Bifidobacterium breve</i> Bb-18	200 million CFU/g
<i>Bifidobacterium longum</i> BI-05	200 million CFU/g
<i>Lactobacillus reuteri</i> KP-1E1	100 million CFU/g
<i>Lactobacillus gasseri</i> Lg-36	100 million CFU/g
<i>Saccharomyces cerevisiae ssp. boulardii</i>	2.5 billion CFU/g

### PREBIOTIC

Actinidia chinensis fruit powder (Golden Kiwi Fruit) 555 mg/g Derived from Livaux® 600mg

**TOTAL:** 23 billion Colony Forming Units (CFU) / 2 Scoops

\*the above table lists grams per dose- the full dose for this product is 2 Scoops.



90G ORAL POWDER

## KEY FEATURES

- Broad Spectrum Multi Strain Formula with 18 Scientific Strains
- Award Winning natural Prebiotic derived from Golden Kiwi Fruit
- 4 Genus Groups, including *Saccharomyces Boulardii* (healthy yeast)
- Probiotic + Prebiotic Dual Action (Prebiotic = Low FODMAP compliant)
- 23 Billion Colony Forming Units

## DIRECTIONS FOR USE

Supplement upon awakening in the morning. Supplement with water or juice or add the powder to yoghurt, kefir or smoothies and consume immediately or as directed by your practitioner. Do not use if protection seal-cap is torn or missing.

## DOSAGE

Adults take 2 scoops once daily.

Children take one scoop (1.5g) once daily for general well-being. If supplementing this product for the first time, start with half a scoop and increase by half a scoop every 5 days and so on until the full dose is reached for full benefits. People with more complicated digestive disorders may need to increase the dose a lot slower.

## NO ADDED

GMO's Sugar, Dairy (lactose & casein) Grains (wheat & gluten) Animal Products (shellfish, fish & eggs) Tree Nuts, Peanuts, Sulphites, Salicylates, Soy, Colours, Flavours, Sweeteners or Preservatives.



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GUTBIOME - PROTECTING YOUR TRIBE FROM THE INSIDE

# GUTBIOME ADVANCED SYNBIOTIC CAPSULES



This scientific formula helps to reduce the occurrence of upper respiratory tract infections, promote healthy bacteria growth after antibiotic use, improve digestion and bowel function and support healthy immune system function.

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PROBIOTIC & PREBIOTIC  
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FORMULATED FOR STRAIN  
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18 SCIENTIFICALLY  
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## INDICATIONS

- Helps reduce occurrence of symptoms of upper respiratory tract infections in healthy individuals.
- Helps maintain friendly gut flora during antibiotic use.
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- Maintains healthy immune system function.
- Supports digestion and assimilation of nutrients
- Helps increase digestive system good bacteria growth.
- Helps restore friendly gut flora.
- Maintains healthy digestive system function.
- Supports general health and well-being.
- Helps to maintain healthy bowel function.
- Helps to decrease, reduce and relieve diarrhoea in children \*per 3 capsule dose
- Helps reduce occurrence of traveller's diarrhoea.



90 HARD VEGETARIAN CAPSULES

## INGREDIENTS

Each capsule contains:

### PROBIOTIC STRAIN (microorganism)

PROBIOTIC STRAIN (microorganism)	CFU
<i>Lactobacillus rhamnosus</i> GG	3.33 billion CFU/g
<i>Bifidobacterium animalis ssp. lactis</i> HN019	667 million CFU/g
<i>Bifidobacterium lactis</i> BI-04	667 million CFU/g
<i>Lactobacillus plantarum</i> Lp-115	500 million CFU/g
<i>Lactobacillus paracasei</i> Lpc-37	333.3 million CFU/g
<i>Lactobacillus acidophilus</i> La-14	333.3 million CFU/g
<i>Lactobacillus casei</i> Lc-11	300 million CFU/g
<i>Streptococcus thermophilus</i> St-21	200 million CFU/g
<i>Bifidobacterium infantis</i> Bi-26	100 million CFU/g
<i>Bifidobacterium bifidum</i> Bb-06	66.7 million CFU/g
<i>Lactobacillus delbrueckii ssp. bulgaricus</i> Lb-87	66.7 million CFU/g
<i>Lactobacillus brevis</i> Lbr-35	66.7 million CFU/g
<i>Lactobacillus salivarius ssp. salivarius</i> Ls-33	66.7 million CFU/g
<i>Bifidobacterium breve</i> Bb-18	66.7 million CFU/g
<i>Bifidobacterium longum</i> BI-05	66.7 million CFU/g
<i>Lactobacillus reuteri</i> KP-1E1	33.3 million CFU/g
<i>Lactobacillus gasseri</i> Lg-36	33.3 million CFU/g
<i>Saccharomyces cerevisiae ssp. boulardii</i>	833.3 million CFU/g

### PREBIOTIC

Actinidia chinensis fruit powder (Golden Kiwi Fruit) 185 mg/g Derived from Livaux® 200mg

**TOTAL:** 23 billion Colony Forming Units (CFU) / 3 Capsules

\*the above table lists grams per capsule - the full dose for this product is 3 capsules.

## KEY FEATURES

- Broad Spectrum Multi Strain Formula with 18 Scientific Strains
- Award Winning natural Prebiotic derived from Golden Kiwi Fruit
- 4 Genus Groups, including *Saccharomyces Boulardii* (healthy yeast)
- Probiotic + Prebiotic Dual Action (Prebiotic = Low FODMAP compliant)
- 23 Billion Colony Forming Units

## DIRECTIONS FOR USE

Supplement upon awakening in the morning. Supplement with water or juice or open the capsule and add to yoghurt, kefir or smoothies and consume immediately or as directed by your practitioner. Do not use if protection seal-cap is torn or missing.

## DOSAGE

Adults take 3 capsules once daily.

Children take one to two capsules once daily for general well-being. If supplementing this product for the first time, start with one capsule and increase by one capsule every seven days and so on until the full dose is reached for full benefits. People with more complicated digestive disorders may need to increase the dose a lot slower.

## NO ADDED

GMO's Sugar, Dairy (lactose & casein) Grains (wheat & gluten) Animal Products (shellfish, fish & eggs) Tree Nuts, Peanuts, Sulphites, Salicylates, Soy, Colours, Flavours, Sweeteners or Preservatives.



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GUTBIOME - PROTECTING YOUR TRIBE FROM THE INSIDE

# UNDERSTANDING THE SCIENCE & BENEFITS OF OUR PREBIOTIC LIVAUX®

## INCREASING IMPORTANT BENEFICIAL BACTERIA GROWTH

The ratio of beneficial bacteria in your gut microbiome is stated to be a factor in a whole range of health problems, including IBS, IBD, colorectal cancer, diabetes, thyroid disorders, asthma and allergies (1). Only recently, an intestinal bacterium called *Faecalibacterium prausnitzii* (*F. prau*) was found to be very important for gut flora balance. *F. prau* is the most numerous and abundant bacteria in the human body (accounting for 5% up to as much as 15% compared to all other 5,000 types of human microbiome species (7)). Importantly, *F. prau* is considered a commensal functionally significant bacteria in the human microbiome because it is only seen in high abundance in healthy individuals with a strong immune system. In contrast, *F. prau* is seen to be significantly depleted in immune compromised individuals. Low numbers have been associated with irritable bowel syndrome (IBS), inflammatory bowel diseases (IBD, including ulcerative colitis and Crohn's disease) and coeliac disease (1,7).

*F. prau* can not be supplemented as a strain specific probiotic because it is oxygen sensitive and will not survive outside the human body, however our unique award winning prebiotic ingredient 'Livaux®' derived naturally from golden kiwi fruit, has been scientifically proven to increase the growth of this important health promoting gutbiome resident bacteria by functioning as its active food substrate when supplemented. Further to this, Livaux® functions to also feed the 18 strains of beneficial probiotic bacteria it comes packaged with in Gutbiome's Advanced Synbiotic formulas supporting further beneficial growth (2).



## PREBIOTIC AFFECTS OF LIVAUX® IN VITRO – TESTING MICROBIAL GROWTH FOR BENEFICIAL AND PATHOGENIC BACTERIA

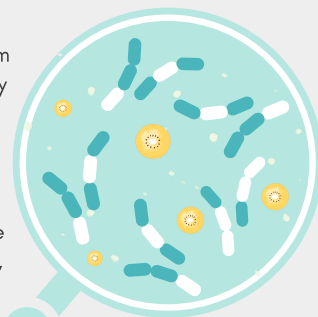
Livaux was tested in vitro for potential growth outcomes for prebiotic and anti-pathogenic effects on the growth of a panel of strains including *Lactobacillus rhamnosus GG* and *Bifidobacterium animalis subspecies lactis* strains alongside a selection of pathogenic bacteria. The growth outcomes indicated that Livaux® supported the growth of the probiotic strains (*Bifidobacteria* & *Lactobacillus*), whilst not supporting the growth of pathogenic bacteria, versus the control. The observed effect is likely due to the presence of digestion-resistant carbohydrates and one or more of the phytochemicals found in Livaux® (6).

## REFERENCES

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## THE PROBLEM

Beneficial bacteria *Faecalibacterium prausnitzii* accounts for approximately 15% of human gut bacteria and is seen in high abundance in healthy individuals however, this bacteria is seen to be depleted in immune compromised individuals and people who have IBS, IBD, Crohn's disease, celiac disease and ulcerative colitis.



## SUPPORTIVE ACTION

Increase *Faecalibacterium prausnitzii* bacteria abundance & support the growth of other probiotic bacteria richness with broad spectrum, multi strain probiotics and prebiotics 'synbiotics' containing Livaux®.

## LIVAUX® CONTROLLED HUMAN TRIAL

In a randomized controlled human trial, Livaux® has shown to stimulate proliferation of the commensal *F. prau* in participants with low initial *F. prau* concentrations and this may be associated with higher in-situ butyrate concentrations. The author concludes that these results bear clinical relevance as stimulating an increase in an abundant butyrogenic bacterium could have beneficial consequences for ulcerative colitis patients (3).

## LIVAUX® CLINICAL STUDY

An Anagenix clinical study showed that *F. prau* levels increased by double after Livaux® treatment, going from 3.4% to 7.0%. Study participants also noted an improvement in their 'general feeling of wellness' following a course of Livaux® (2).

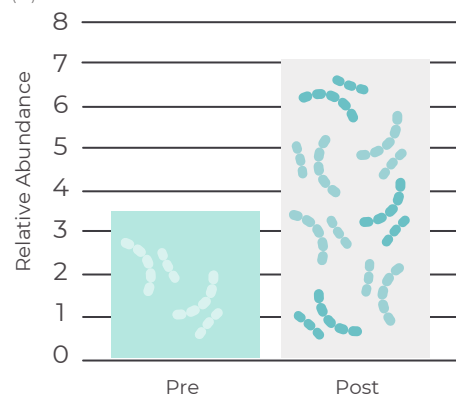


FIG 2: (2)

## LIVAUX® INGREDIENT

Livaux® is a "precision prebiotic" targeted to support the growth of healthy bacteria including *F. prau*, which is low in people suffering from gastrointestinal disorders. Livaux® is a LOW-FODMAP compliant fibre and can support constipation when supplemented in a higher dose (2,3,4).

As a whole-fruit solution, it is safe and effective for children and adult formulas, including for specific health conditions such as IBS, IBD (Crohn's disease and ulcerative colitis) and celiac disease sufferers (3).

## LIVAUX® PREBIOTIC INGREDIENT OF THE YEAR AWARD

Livaux® has won several consecutive awards for 'Prebiotic Ingredient of the Year' by Nutralngredients Asia (2020), while also winning 'Prebiotic of the Year Award' in the United States (2020) and again a finalist by Nutralngredients Asia (2021 & 2022) for Prebiotic of the year (5).

# RESTORE GUT FLORA DURING & AFTER ANTIBIOTIC USE

## ANTIBIOTIC USE AND ITS AFFECTS ON THE MICROBIOME

Several lines of evidence confirm that antibiotic administration can result in a state of gut dysbiosis, i.e. disturbance in composition and function. Broad-spectrum antibiotics can affect the abundances of 30% of the bacteria in the gut community, causing rapid and significant drops in taxonomic richness, diversity and evenness (1). Once antibiotic treatment has stopped, the microbiome may present a certain degree of resilience, being capable of returning to a composition similar to the original one, but the initial state is often not totally recovered. In fact, antibiotic-induced microbiome alterations can remain after long periods of time, spanning months and even years (2).

The most comprehensive report produced on Australian antimicrobial use and resistance trends (AURA 2019) has found that antimicrobial use in the community continues to be over-prescribed, and some dangerous bacteria are growing increasingly resistant to common antibiotics (4). The report found that in 2017, more than 10 million Australians had at least one antibiotic dispensed in the community and more than 26.5 million prescriptions for antimicrobials were dispensed. AURA (2019) also identifies focus areas that need increased attention - including reducing inappropriate prescribing of broad spectrum antibiotics, particularly for urinary tract and skin infections; and improving the appropriateness of antibiotic prescribing for chronic obstructive pulmonary disease and other respiratory infections (3,4).

Whilst effective in killing bad bacteria, antibiotics are essentially non-selective and can also deplete the beneficial bacteria residing in the gut. This is thought to more commonly contribute to the development of diarrhoea, constipation and/or vaginal thrush when taking an antibiotic. In certain cases, this disruption to our gut microbiome can result in an overgrowth of unwanted, pathogenic bacteria such as *Clostridium difficile* (10).

## TAKING A BROAD SPECTRUM PROBIOTIC DURING & AFTER ANTIBIOTIC TREATMENT

Of course, when the need arrives to fight active debilitating infection, the benefits of taking antibiotics can outweigh the associated negatives so taking a probiotic during antibiotic treatment can help to minimise digestive upset that occurs as a result of the disruption to our gut microbiome, otherwise known as gut dysbiosis (7).

People taking antibiotics may experience:

- Antibiotic-associated diarrhoea
- Loss of appetite
- Bloating
- Nausea
- Indigestion
- Abdominal pain
- Fatigue, feeling low on energy or 'wiped out'.

Antibiotic-associated diarrhoea (AAD) is one of the most common side effects of antibiotics, with a prevalence of between 5 to 35%, depending on the type of antibiotic taken (7). Taking probiotics whilst taking antibiotics may help maintain gut microbiome health during antibiotic therapy. Replenishing the gut with beneficial bacteria helps to rebalance the gut microbiome and reduce the risk of developing common side effects of antibiotics (8, 6).

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## THE PROBLEM

Antibiotic resistance occurs when antibiotic medicine fails to kill the bacteria infection. This bacteria then multiplies causing gut dysbiosis and serious, untreatable infections, illness and disease. This is one of the biggest threats to global human health and the progress of modern medicine.



## SUPPORTIVE ACTION

Restore gut flora during and after antibiotic use with scientific supported probiotic and prebiotic formulas. Talk to patients about the benefits of restoring beneficial bacterial balance and diversity.

Not all probiotics work in the same way. Probiotics that are taken alongside antibiotics should be strain specific and importantly, scientifically formulated to support its functions to maintain and restore friendly bacteria during and after antibiotic use.

## STRAIN SPECIFIC PROBIOTICS MAY REDUCE THE RISK OF ANTIBIOTIC ASSOCIATED DIARRHOEA (AAD)

A recent meta-analysis (8) found that using probiotics for the prevention of antibiotic-associated diarrhea reduces the risk of AAD by 51% with a moderate quality of evidence according to GRADE (8). This result was confirmed in analyses of specific strains; *Lactobacillus rhamnosus* GG and *Saccharomyces boulardii* with further clinical trials suggesting that *Lactobacillus* GG reduced AAD risk in children by 71% (8, 13). An assessment of 11 randomized clinical trials with a total of 2,444 participants showed that *Lactobacillus rhamnosus* GG is most effective in treating infectious diarrhea at a daily dose of 10 CFU (13).

## SUPPLEMENTING PROBIOTICS ALONGSIDE ANTIBIOTICS

It is generally recommended to take probiotics every day during your course of antibiotic treatment and to take them at the same time; this way you can replenish your friendly bacteria daily before your digestive system is upset by any longstanding microbial imbalance and reduce potential side-effects. Even when you have taken a probiotic during the course of your antibiotic medication, continued daily supplementation of probiotics is recommended for up to 2-3 months to help restore a healthy state of the gut microbiome. Scientists are not really sure exactly how long it will take to rebuild the gut flora after antibiotics; it depends on several factors such as the individual's unique gut microbiome, the length of the antibiotic course, the strength of medication, diet and lifestyle etc. A good practice for practitioners is to take these concepts into account when making these recommendations and to identify the individual symptoms presented.

## INCREASED DOSE SPECIFIC SUPPORT FOR ACUTE DIARRHOEA

Gutbiome Advanced Synbiotic Capsules & Powder Formulas both contain precision strains for the following: *Lactobacillus rhamnosus* GG to specifically relieve diarrhoea in children when specifically supplemented 3 grams per dose (12). *Saccharomyces cerevisiae* spp. *boulardii* to specifically help reduce the occurrence of symptoms of traveller's diarrhoea when supplementing 6 grams per dose (7).

# REDUCE INCIDENCE OF UPPER RESPIRATORY TRACT INFECTIONS

## UPPER RESPIRATORY TRACT INFECTIONS

Acute upper respiratory tract infections (URTIs) are a major cause of morbidity, especially in children and the elderly (1, 5). In 2018-19, 29% (238,020) of Indigenous Australians self-reported having a respiratory disease lasting or likely to last six months or more (8).

Upper respiratory tract Infections include:

- the common cold
- acute sinusitis
- acute pharyngitis
- acute laryngotracheobronchitis
- croup
- acute epiglottitis (supraglottitis)
- acute rhinosinusitis
- acute otitis media (AOM)

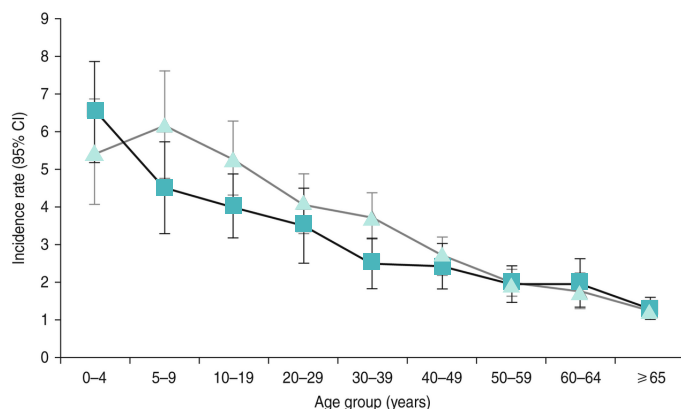
At a rate of 5.5 per 100 encounters, URTI is the most common problem managed in Australian general practice (2). A variety of viruses and bacteria can cause upper respiratory tract infections. These cause a variety of patient diseases including acute bronchitis, the common cold, influenza, and respiratory distress syndromes (3).

The common cold continues to be a large burden on society, economically and socially. The most common virus is rhinovirus. Other viruses include the influenza virus, adenovirus, enterovirus, respiratory syncytial virus and coronavirus (2, 4). COVID-19 is a disease caused by SARS-CoV-2 that can trigger what doctors call a respiratory tract infection. It can affect your upper respiratory tract (sinuses, nose, and throat) or lower respiratory tract (windpipe and lungs) (4).

## INCIDENCE RATE OF RESPIRATORY ILLNESS IN AUSTRALIA - BY AGE AND SEX

Australian studies of respiratory infections report that the incidence of respiratory illness varies between 2.2 and 5.6 cases/person per year (6).

FIG:1 (6)



Incidence of acute respiratory infection/person per year, by age and sex (weighted to the Australian population), 2008-2009. Error bars represent 95% confidence intervals (CIs) around point estimates.

■-, Males; ▲-, females.

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## THE PROBLEM

Upper respiratory tract infections are the most common reason for general practice visits within Australia.

Those who are most vulnerable with the highest re-occurrence of URTIs are young children with developing immune systems, the elderly and indigenous communities



## SUPPORTIVE ACTION

Restore gut flora during and after antibiotic use with scientific supported probiotic and prebiotic formulas. Talk to patients about the benefits of restoring bacterial balance and diversity.

## SCIENTIFIC EVIDENCE SUPPORTING CONSUMPTION OF PROBIOTICS FOR THE REDUCTION OF URTI'S

Accumulating evidence suggests that probiotic consumption may decrease the incidence of or modify URTI's (7). A randomised double-blind placebo-controlled trial with 465 participants compared incidences of upper respiratory illness episodes with supplementation of *B. animalis subsp. lactis* BI-04 compared to placebo (7). The main finding in this study was that daily BI-04 supplementation was associated with a statistically significant 27% reduction in the risk of URTI episodes compared to placebo supplementation. The authors concluded that probiotic BI-04 appears to be a useful nutritional supplement in reducing the risk of URTI's in healthy physically-active adults (7).

## BENEFICIAL EFFECTS OF PROBIOTICS IN UPPER RESPIRATORY TRACT INFECTIONS

Clinical trials have shown that probiotics can be used as preventive and therapeutic agents in upper respiratory tract infections (9). Their mechanical properties allow them to aggregate and to compete with pathogens for nutrients, space and attachment to host cells. Consequently, they can directly antagonize pathogens and thus exert beneficial effects without directly affecting the metabolism of the host (9).

The common cold, acute sinusitis and rhinosinusitis are among the most frequently reported illnesses by parents of children who attend childcare centres (10). A systemic review and meta analysis comparing the effectiveness of Lactobacillus and Bifidobacterium probiotics strains for children and acute respiratory tract infections at day care centres revealed statistically significant results for eight trials conducted, suggesting fewer numbers of days absent from day care/school in participants who had taken probiotics than in those who had taken a placebo (SMD - 0.18 (95% CI - 0.34, - 0.02), P= 0.03) (10,11).

Gutbiome Advanced Synbiotic Capsules & Powder Formulas both contain a precision strain: *Bifidobacterium animalis subsp. lactis* BI-04 to specifically reduce occurrence of symptoms of upper respiratory tract infections in healthy individuals (7).

**END NOTE:** Taking antibiotics like penicillin for viral respiratory infections not only is ineffective but likely contributes to the global rise of antibiotic-resistant infections.



# SUPPORT DIGESTION & MAINTAIN HEALTHY BOWEL FUNCTION

## NUTRIENT ABSORPTION & INTESTINAL DISEASE

Nutrient absorption is fundamental to human health and occurs in the small intestine (SI). Diseases affecting the SI may therefore disrupt nutrient absorption and result in malabsorption. Malabsorption occurs when nutrient absorption is disrupted by the pathology of SI diseases or a shift in the microbiome flora causing a decrease in butyrate production and an unhealthy state of gut dysbiosis altering the structure and permeability of the SI epithelial barrier (1).

Digestive disorders are a group of conditions that occur when the digestive system does not function as it should. Health experts split them into two categories: organic and functional GI disorders (6).

*Organic GI disorders* occur when there are structural abnormalities in the digestive system, which prevents it from working properly (ie villi damage or intestinal inflammation). In *functional GI disorders*, the GI tract appears to be structurally normal but does not function well and can be very debilitating (6).

Some of the more common digestive disorders include: (6)

- irritable bowel syndrome (IBS) - *functional GI disorder*
- small intestinal bacterial overgrowth (SIBO) - *functional GI disorder*
- gastroesophageal reflux disease (GERD) - *functional GI disorder*
- celiac disease - *Organic GI disorder*
- Crohn's disease - *Organic GI disorder*
- ulcerative colitis (UC) - *Organic GI disorder*

Irritable bowel syndrome (IBS) is the most prevalent functional gastrointestinal disorder commonly reported in medical practice and it is estimated that 10-15% of the global population has IBS (3). IBS is a functional condition where the colon muscle contracts more or less often than "normal" and can result in fluctuating diarrhoea and/or constipation, or predominantly one of these states more than the other. Certain foods, medicines and emotional stress are some factors that can trigger IBS. Pain, cramps, gas and bloating are the most common IBS symptoms (3).

The worldwide burden of inflammatory bowel disease (IBD), which includes Crohn's disease and ulcerative colitis, has increased markedly every year (4). Treatment options for IBS and IBD are specific in addressing the symptoms compared to the mucosa membrane state. Instead, medication to help manage diarrhoea or laxatives for constipation are used, followed by antibiotics, immunosuppressive drugs or invasive surgery (4, 10).

## PROBIOTICS & THEIR GI RESTORATIVE EFFECTS

Human clinical trials suggest that probiotics and prebiotics can have a restorative effect on gut integrity and nutrient uptake by promoting a balanced state in the small intestine (1, 2).

Studies in gut (intestinal) dysbiosis have indicated that probiotic supplements containing lactic acid bacteria and Bifidobacterium have been demonstrated to effectively support the growth of beneficial bacteria in the *small intestine* (SI), while improving barrier integrity and reducing nutrient malabsorption and SI disease-related pathology (1). Strain-specific probiotic therapy may be a natural and effective approach to restoring SI barrier integrity and eubiosis (microbiome balance), resulting in improved nutrient absorption and better health, including reducing the incidence of and severity of SI diseases (1).

## THE PROBLEM

10-15% of the global population has IBS and the prevalence for inflammatory bowel diseases like Crohn's disease & ulcerative colitis continue to rise. Nutrient malabsorption & digestion problems affect our overall health. Treatment options addressing GI disorders are limited.



## SUPPORTIVE ACTION

Restore gastrointestinal health with scientific supported probiotic and prebiotic formulas designed to improve gut permeability and absorption of nutrients by promoting accelerated epithelial repair and significantly reduce functional IBS and IBD symptoms.

Studies in gut permeability and the use of probiotics have shown to decrease the capacity of the small bowel to utilize and absorb dietary compounds (1). In support of this, several meta-analyses demonstrate probiotic benefits in modulating symptoms of various GI diseases, such as irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), and Clostridium difficile infections (1, 2).

## LACTOBACILLUS ACIDOPHILUS

Lactobacillus acidophilus is one of the most prominent strains of beneficial bacteria that predominantly reside in the small intestine. They provide a number of beneficial functions and effects, such as, prevention of bacterial infections, enhancement of digestion and absorption of nutrients. Maintaining a healthy colonization of intestinal microflora with beneficial bacteria such as *Lactobacillus acidophilus* is a key factor in an individuals overall health (5).

*Lactobacillus* species are typically used in cases when a disease occurs or might occur due to depleted normal flora (gut dysbiosis) (7). *Lactobacillus* has shown to inhibit the translocation of bacteria across the intestinal mucosa by strengthening the epithelial barrier and by promoting accelerated epithelial repair (7).

## BIFIDOBACTERIUM ANIMALIS, SSP. LACTIS HN019

*Bifidobacteria* appear to be the most important organisms in the intestine for providing a microbial barrier to infection and are typically used in cases when a disease occurs or might occur due to depleted normal flora (5). A triple-blind, randomized, placebo-controlled trial assessed the impact of *Bifidobacterium lactis* HN019 supplementation on whole gut transit time (WGTT) and frequency of functional gastrointestinal (GI) symptoms in adults (8). The results indicated that *B.lactis* HN019 had statistically significant decreases in mean WGTT over the 14-day study period with up to 25-33% reduction transit time compared to no change observed in the placebo group. Of the nine functional GI symptoms investigated in this study, up to eight significantly decreased in frequency. This study concludes that daily *B.lactis* HN019 supplementation significantly improves whole gut transit time and functional GI symptoms (8).

Gutbiome Advanced Synbiotic Formulas both contain:

Probiotic: *Lactobacillus acidophilus* to support digestive system good bacteria growth and improve digestion and assimilation of nutrients (5, 7).  
Probiotic: *Bifidobacterium animalis, ssp. lactis* HN019 to specifically support healthy growth and development and GI health (8, 9).

\*Read our Prebiotic Livaux® Technical Data to identify the benefits for ulcerative colitis patients.

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# IMMUNE SYSTEM HEALTH & RESTORE A HEALTHY MICROBIOME STATE

## THE MICROBIOME

The human microbiome is a community of microorganisms that can be found all over our body surfaces, especially in the mouth, gut and vagina, as well as the skin and our eyes (1).

The human microbiome is made up of fungi, yeasts, Archaea and viruses, but is mostly made up of bacteria (2). An average human harbors 38 trillion bacterial cells and 97% of these bacteria inhabit the large intestine (3). Our gut microbiome alone contains over 5,000 different bacteria species, each playing a role in immune modulation (4).

Each of us have our own unique colonies of microorganisms living within us and the diversity of these colonies will fluctuate over our lifetime. The womb was thought to be sterile, but some scientists argue that it is in-fact where the microbiome begins (6). What we do know, however is that an infant will come into contact with most of its first colonizers of bacteria at birth (7,8). By the time the child becomes an adult, their microbiome has matured with a vast diversity of bacteria, but this diversity will fluctuate over time and decrease with age (8,9). During these life stages, our gut microbiome diversity and balance can become disrupted by different lifestyle factors, medical intervention, stress and illness (2). This disruption can cause an unhealthy state of gut dysbiosis (intestinal microbiome imbalance).

## UNBALANCED IMMUNE SYSTEM

If the gut microbiome is disrupted it becomes unbalanced and opportunistic pathogens and negative activities of gut microbes can overpopulate.

An unbalanced microbiome is associated with the following conditions, (10)

- Antibiotic-associated diarrhea
- C. difficile infection
- Diabetes
- Metabolic syndrome and obesity
- Allergies
- Inflammatory bowel disease
- Irritable bowel syndrome
- Auto-immune diseases
- Colon cancer
- Depression and anxiety
- Skin disorders, eczema dermatitis

Without a healthy functioning immune system, our ability to fight harmful bacteria, pathogens, viruses and fungi will be impaired and responding to disease causing changes in our body such as cancer cells will be reduced (11). Our gut microbiome in particular plays an integral role in regulating a balanced immune system for overall health and well-being (5).

## PROBIOTICS AFFECTS ON IMMUNE SYSTEM FUNCTION

Probiotic organisms are believed to work in part by maintaining and enhancing the immune system, by competing with harmful pathogenic bacteria for binding sites on mucosal surfaces, and by producing chemicals that inactivate or kill pathogens (12). Certain species of bacteria can have large effects on the gut immune system and the balance of these influences are important to the maintenance of homeostasis and the development of disease treatment and management strategies. In this context, probiotics are a powerful strategy for manipulating the microbial composition and immune responses of the host (13).

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## THE PROBLEM

Abnormalities of the immune system can lead to a reduced capacity to protect ourselves against infections and illness and can lead to allergic diseases, immunodeficiencies and autoimmune disorders. The prevalence of immune mediated inflammatory disease in Western society is about 5%-7% (19)



## SUPPORTIVE ACTION

Maintain and support the immune system with synbiotics. Talk to patients about how probiotics can help modulate the immune system through different life stages and periods of illness and disease.

A growing body of evidence indicates that some probiotic strains are capable of modulating the immune system at both the systemic and the mucosal membrane level, affecting many cell types (e.g. epithelial cells, dendritic cells, natural killer cells). Many pathogenic organisms must associate with the GIT epithelium in order to colonise effectively. However, some strains of bifidobacteria and lactobacilli can adhere to the epithelium and create 'colonisation barriers' which act as the gut guardians by preventing pathogens from adhering to the mucosa (14).

There is coordinated cross talk between the gut microbiota and the immune system, allowing the host to tolerate the large amount of antigens present in the gut. Much evidence has highlighted the role of the microbiota in health and disease. The advances in current knowledge of gut microbial biodiversity allow us to understand the mechanisms of how different microorganisms influence host function and these mechanisms' impact. Altered microbiota (dysbiosis) are associated with gastrointestinal disorders, but more recently, we observed microbial imbalance associated with broad diseases that are not restricted to the gastrointestinal tract (10, 11).

## PROBIOTIC IMMUNE FUNCTION ON ASTHMA & ECZEMA

A Meta-analysis of clinical trials in early childhood Asthma showed that prenatal and/or early life probiotic administration has shown to be effective in reducing total immunoglobulin E (IgE) to common allergens and reduction in atopic sensitisation when administered prenatally and postnatally (15).

Atopic dermatitis, the most common form of eczema, is also one of the most common chronic inflammatory skin disorders, affecting approximately 15% to 20% of children and 1% to 3% of adults worldwide (17).

In a double blinded randomised placebo controlled trial *Lactobacillus rhamnosus GG* was shown to have preventative effects on atopic eczema in at risk children extended to the age of 4 years with follow-up results (17).

## PROBIOTICS AND CLINICAL EFFECTIVENESS

Results of evidence-based analysis from many human studies and animal models suggest that probiotics have potential for clinical effectiveness on intestinal diseases, including infectious diarrhea, antibiotic-associated diarrhea, atopic diseases, necrotizing enterocolitis, ulcerative colitis, and irritable bowel syndrome, and extraintestinal diseases, such as allergy (18). Current evidence shows promise for further developing health benefits and the efficacy of probiotics and probiotic-derived factors on the regulation of host homeostasis, including immune health (18).

# SUPPORT GUT DIVERSITY & BALANCE – WITH DUAL ACTION SYNBIOTICS

## GUT BACTERIA OVERGROWTH – GUT DYSBIOSIS – SIBO

A healthy microbiome consists of a vast and diverse range of microbial population comprising bacteria all thriving in a balanced symbiotic relationship. When this relationship is disrupted, the microbiome may result in a state of *gut dysbiosis* (GD) or small intestinal bacteria overgrowth (SIBO). Dysbiosis, disruption of the normal balance between the gut microbiota and host, has been associated with obesity, malnutrition, inflammatory bowel diseases (IBD), neurological disorders, and cancer (1), to name a few. *Small Intestinal Bacterial Overgrowth* (SIBO) is a form of gut dysbiosis where abnormally large numbers of bacteria reside in the small intestine. Even though these bacteria in themselves may not be harmful, in excessive numbers they can cause a host of physical and mental symptoms (2).

Possible physical symptoms of SIBO & GD (2)

- Bloating
- Gas
- Abdominal pain
- Bowel movement irregularities (constipation/diarrhoea)
- Acid reflux
- Nausea
- Fatigue and inability to concentrate

## IMPORTANCE OF GUT DIVERSITY AND ABUNDANCE

Microbial diversity, balance and abundance in the gut are important to maintain human health and well being. The microbiome is essential to prevent the attachment, growth, and penetration of pathogenic microorganisms on the gut surface. The intestinal microbiome plays an important role in pathogen resistance, both by direct interaction with pathogenic bacteria and by influencing the immune system (3, 5).

## BROAD SPECTRUM – MULTI STRAIN FORMULAS FOR INCREASED DIVERSITY & HEALTHY BACTERIA ABUNDANCE

When it comes to protecting the host from disease outbreaks, it has been proven that using a *multi strain probiotic* (MSP), from a broad spectrum of genus groups (including beneficial yeast) as opposed to single strain formulas, gives a wider beneficial spectrum to the host. The applications of MSP range through many aspects such as growth promotion, inhibition of pathogens, improved immune response, and many other benefits (4, 5). Several studies have indicated that MSP provide greater diversity and also more potential niches that increase its efficacy spectrum (5, 6). Further to this, several studies have shown that probiotics could be used in combination with prebiotics to form *synbiotics* to give maximum benefits for better physiological effects (4, 5).

## SYNBIOTICS – PROBIOTIC AND PREBIOTIC FORMULAS

Given the effects of prebiotics and probiotics in the gut microbiome, yielding a healthier microbiome and immuno-modulatory properties, and the synergism between these agents, the use of synbiotics to treat many disorders is in this context, strongly supports as a powerful strategy for manipulating the microbial composition and immune responses of the host. Substantial literature is accumulating on prebiotics and probiotics used in combination for the management of several chronic diseases states and this literature is growing (3).

## THE PROBLEM

Significant gut abnormalities and disease can occur as a result of GD and SIBO related conditions. Gut bacteria overgrowth can lead to more serious conditions relating to malabsorption, inflammatory bowel disease, neurological disorders, immune disorders and even cancer.



## SUPPORTIVE ACTION

Increase gut diversity and healthy bacteria richness and abundance with broad spectrum, multi strain probiotics and prebiotics '*synbiotics*'. Talk to patients about gut diversity and multi strain formula benefits.

'...The benefits of multi-strain mixtures may include broader range of effects and more mechanisms of action...'

*Dr Lynne McFarland from the University of Seattle*

## SYNBIOTIC: BY DEFINITION

A synbiotic is defined as a "mixture of probiotics and prebiotics that beneficially affects the host by improving the survival and activity of beneficial microorganisms in the gut" (7,8).

## WHAT ARE SYNBIOTICS

- Synbiotics provide a unique way to promote the health of the gutbiome and increase microbiome diversity.
- Synbiotics are formed when probiotics and a prebiotic substrate work together in a unique and synergistic way to deliver healthy bacteria growth and abundance to the gut.
- The synergistic nature of both ingredients working together enable an increase of healthy bacteria survival during the gut journey.
- The **probiotics** are made up of billions of beneficial bacteria and the **prebiotics** are the food source for the healthy bacteria to grow and thrive.

## GUTBIOME ADVANCED SYNBIOTIC ADVANTAGE

The cooperative nature of our synbiotic formula has a unique dual action to promote beneficial bacteria growth:

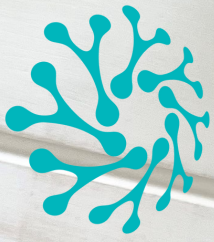
- It increases the growth and diversity of new beneficial bacteria added to the gut that our 18 strain formula provides and importantly,
- It increases the growth of an important healthy bacteria already existing in the gut called *Faecalibacterium Prausnitzii* (F. prau).
- Why is this important? ...Because F.prau is the most abundant bacteria in the human body (accounting for up to 15% compared to other bacteria) and is seen in high abundance in healthy individuals with a strong immune system. In contrast, this bacteria is seen to be depleted in immune compromised individuals. F. prau can not be supplemented as a probiotic strain because it will not survive outside the human body, however our unique award winning prebiotic ingredient Livaux® derived naturally from golden kiwi fruit, has been scientifically proven to increase its growth (9).

'...Biodiversity is a measure of gut health – a more diverse diet is a more diverse microbiome...'

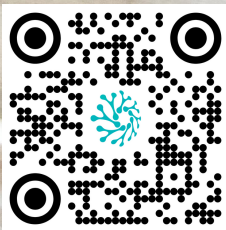
*Dr Dr. Will Bultiewicz, (gastroenterologist) Author Fiber Fueled*

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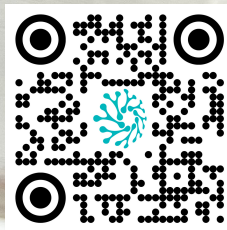
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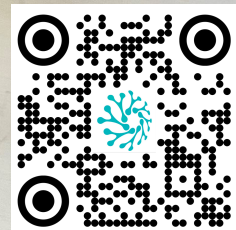
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