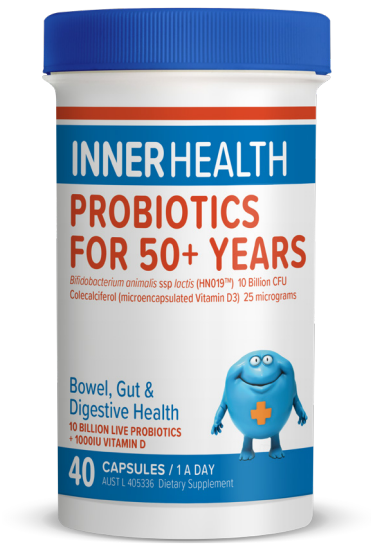
INNER HEALTH



GENERAL HEALTH & WELLBEING

PROBIOTICS FOR 50+ YEARS

- ✓ Formulated for everyday health & wellbeing of people over the age of 50
- ✓ Supports bowel health & regularity
- ✓ Support immunity in people over the age of 50
- ✓ Nourishes good gut bacteria

EACH CAPSULE CONTAINS 10 BILLION LIVE PROBIOTICS:

Bifidobacterium animalis ssp *lactis* (HNO19™)	10 Billion CFU
Colecalciferol (microencapsulated Vitamin D3)	25 micrograms

PATIENT INSIGHT:

- With aging the composition of the microbiome becomes less diverse, with declining numbers of Bifidobacteria being particularly clinically relevant[1]
- As we age, concerns for bowel regularity increase as constipation becomes more prevalent[2]
- Immune function naturally declines with the aging process,[3] with decreases in vitamin D synthesis being a contributing factor[4]

CLINICAL FOCUS:

- Support for bowel regularity and gastrointestinal function in those aged over 50
- Support for microbiome health in those aged over 50
- Support for immune system health and function in those aged over 50
- Help to prevent dietary vitamin D deficiency

KEY FORMULA FEATURES:

- 100% Bifidobacteria probiotic at a high strenth dose that is clinically researched to help a mature gut
- Full daily dose of vitamin D3

KEY ACTIONS:

- Maintain bowel regularity in individuals over 50 years
- Maintain healthy gastrointestinal function in individuals over 50 years
- Maintain immune system health in indivuals over 50 years

PROFESSIONAL PRESCRIBING GUIDELINES:

Directions for use:
Adults 50+: Take 1 capsule daily or as directed by a healthcare professional. Always read the label and follow the directions for use.

CONTRAINDICATIONS:

Calcipotriene: Calcipotriene is a vitamin D analogue used topically for psoriasis. It can be absorbed in sufficient amounts to cause systemic effects, including hypercalcaemia. Theoretically, combining calcipotriene with vitamin D supplements might increase the risk of hypercalcaemia. Avoid concurrent use.[5]
Calcitriol: Calcitriol is a vitamin D analogue and when used in conjunction with vitamin D supplements may have an additive effect and increase risk of vitamin D toxicity and hypercalcaemia. Avoid concurrent use.[6]

CAUTIONS:

Moderate level

- **Calcium Channel blockers:** Hypercalcaemia, due to high doses of vitamin D, can reduce the effectiveness of calcium channel blockers in atrial fibrillation. Monitor and avoid vitamin D doses above 2000 IU (50 µg) daily.[5]
- **Digoxin:** Hypercalcaemia induced by high doses of vitamin D can increase the risk of fatal cardiac arrhythmias with cardiac glycosides. Use under medical supervision only and avoid vitamin D doses above 2000 IU (50 µg) daily.[5]
- **Hyperparathyroidism:** Vitamin D doses above 2000 IU (50 µg) daily may cause hypercalcaemia and should be avoided due to the risk of increased calcium accumulation. For doses under 2000 IU, use caution and only under medical supervision.[5]
- **Thiazide diuretics:** Thiazide diuretics decrease urinary calcium excretion, which could lead to hypercalcaemia if vitamin D supplements are taken concurrently. This has been reported in people being treated with vitamin D for hypoparathyroidism, and also in elderly people with normal parathyroid function who were taking a thiazide, vitamin D, and calcium-containing antacids daily. Use combinations of thiazides and vitamin D with caution and monitor serum calcium levels.[5]
- **Verapamil:** Hypercalcaemia induced by high doses of vitamin D can reduce the effectiveness of verapamil in atrial fibrillation. Avoid vitamin D doses above 2000 IU (50 µg) daily and monitor serum calcium Levels in people taking vitamin D and verapamil concurrently.[5]

PREGNANCY:

Likely safe. While a review did not identify any concern for use during pregnancy and there is evidence to support the use of vitamin D during pregnancy; and HN019™ during the first and last trimester but not the entire pregnancy,[7,8] Practitioner discretion is advised.

BREASTFEEDING:

Likely safe. While there is evidence to support the use of these ingredients during breastfeeding, and a review did not identify concerns for use,[9,10] Practitioner discretion is advised.

NO ADDED:

Artificial flavourings, colourings or preservatives.

FREE FROM:

Gluten, wheat, dairy, lactose, soy, eggs & nuts.

Suitable for vegetarians.

Not all cautions, contraindications and warnings are listed. For full details and references, see **Metagenics Pharmacy Academy**, or contact **Clinical Support** on 1800 777 648 or email ANZ_clinicalsupport@metagenics.com.

HCP COUNSELLING QUESTIONS

Q. I already take a probiotic for my digestive health. Why should I take Inner Health Probiotic for 50+ Years instead?
Probiotic formulas contain different strains of bacteria, so it is important to take one that contains specific strains for your health needs. Inner Health Probiotic for 50+ Years has been specifically formulated with *Bifidobacterium animalis* ssp *lactis* (HNO19™) to support the gut heath needs of individuals over 50 years. It also contains 1000 IU of vitamin D to support immune health in this age group.[3]

Q. When is the best time of day to take Inner Health Probiotic for 50+ Years?
Whilst many individuals find it easy to remember to take their probiotic at mealtimes, there is no time of day that is the “best” time, as long as you take it daily.

Q. Is Inner Health Probiotic for 50+ Years suitable for those following a vegan diet?
Inner Health Probiotic for 50+ Years contains microencapsulated vitamin D that is derived from an animal source (lanolin), so is not suitable for those on a vegan diet. However, depending on personal preferences, it may be suitable for those with a vegetarian lifestyle.

CLINICAL FEATURES

As we age, concerns for bowel regularity increase, as constipation becomes highly prevalent.[2] Whilst the pathophysiology behind this is multifactorial, it is worth addressing the composition and health of the gut microbiome when considering therapeutic options.

Support bowel health and regularity

Over a lifetime, the composition of the gut microbiome changes, becoming less diverse with age.[1] In particular, there is a decrease in *Bifidobacterium* species, which can contribute to symptoms of increased transit time and decreased bowel movement frequency (BMF).[11] It is important to note that decreases in BMF and the resulting putrefaction in the colon can also lead to concerns for general immune health, potentially contributing to local and systemic inflammation.[12] Probiotic strain *Bifidobacterium animalis* ssp *lactis* (HN019™) demonstrates positive effects for the relief of constipation,[13] without exerting a stimulant laxative action. Stimulant laxatives work by altering electrolytes transported by the intestinal mucosa,[14] whereas HN019™ influences commensal microbes, such as lactic acid-producing bacteria and their metabolites, such as short-chain fatty acids, to interact with receptors in the gut epithelium, that in turn act upon the enteric nervous system to stimulate peristalsis and regulate colonic motility.[13,15]

This action was demonstrated in a clinical study conducted by Waller et al. Participants were randomised to receive either a low dose of HN019™, a higher dose, or a placebo. Those in both the HN019™ groups had significant decreases in whole-gut transit time, with the higher dose group seeing more profound results versus the placebo group, that actually saw a slight increase in transit time at the end of the study versus baseline. Encouragingly, this study was conducted over a relatively short time (14 days), indicating just how quickly the correct probiotic strains at an adequate dose can alter bowel regularity. Further to this, those in both probiotic groups also showed improvements in other symptoms of functional gastrointestinal health, with those in the higher dose group showing significant improvements in eight of nine measured symptoms, and those in the lower dose group observing similar significant results for seven of the nine measured symptoms.[13] Ibarra and colleagues also demonstrated that a dose of 10 billion CFU per day of HN019™ for 28 days could significantly increase BMF in those with functional constipation (fewer than three bowel movements per week), highlighting the effectiveness of this probiotic strain in more pronounced instances.[16]

Vitamin D status is strongly correlated to bowel regularity.[17] This is not surprising as the general health of the microbiome and vitamin D status are interrelated (Figure 1).[18]

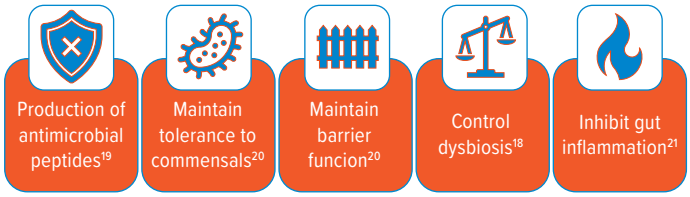


Figure 1: Ways that vitamin D influences the gut microbiome

Research conducted by Panarese et al found that those with slow-transit constipation had significantly lower serum vitamin D levels than healthy, age-matched, controls ($p<0.001$). Those participants with lower vitamin D also had significantly impaired quality-of-life scores ($p<0.001$), highlighting the importance of healthy bowel function for whole-body health and general wellbeing.[17]

After the age of 50, the efficacy of the skin in synthesising vitamin D significantly decreases, as does renal conversion to its active form.[19]

Supports immunity in people over the age of 50

Immune health naturally declines with the aging process.[20] As more than 70% of the immune system is in the gut,[21] it makes sense to support the health of the gut and the microbiome when looking to support immune processes, particularly as we age. Not only does the gut microbiome prime cellular immune responses, it also helps to maintain the barrier of the gut against potential pathogens, and modulate the absorption of the nutrients required for immune health.[12] *Bifidobacterium* are a key commensal genus for immune health.[11] A systematic review and meta-analysis conducted by Miller et al found that supplementation with HN019™ can enhance the phagocytic activity of polymorphonuclear cells in older individuals, highlighting the usefulness of this probiotic strain to support the immune system at a cellular level.[22]

Vitamin D is a crucial nutrient for immune function, with insufficiency in mature-aged people being linked to numerous immune health concerns.[22] Several studies have been conducted on the correlation of adequate vitamin D levels and immune status, as well as on the efficacy of supplemental vitamin D. For example, Kuwabara and colleagues found that in adults aged over 60, those with adequate vitamin D levels were at a significantly lower risk of upper respiratory tract infection than their vitamin D deficient contemporaries.[23] Similarly, a meta-analysis conducted by Martineau et al of 25 trials with over 11 000 participants found that vitamin D supplementation significantly reduced the risk of infection across all age groups analysed. Interestingly, this effect was not seen in those receiving bolus doses, only daily or weekly supplementation.[24]

Nourishes good gut bacteria

As previously mentioned, when we age, our gut microbiota composition becomes less diverse.[1] In particular, *Bifidobacterium* become less prevalent, contributing to the general decline of gut health over time.[11] Whilst constipation is a key symptom of age-related microbiome imbalances, it does not necessarily need to be present. Therefore, when choosing to supplement probiotics in an aging population, it is important to choose strains that have evidence that they will nourish the gut microbiome itself, not only improve symptoms.

Research conducted by Ahmed et al in individuals over the age of 60, found that supplementation with HN019™ improved not only *Bifidobacterium levels*, but other key flora such as *lactobacilli* and *enterococci*. There was also a significant decrease in *enterobacteria*, such as *Escherichia coli*, which can cause infection and gastrointestinal illness if prominent in the mature gut. A washout period was also included in this study to better understand the post-intervention impact of probiotic supplementation. Whilst *Bifidobacterium* levels in the supplement group did not decline to pre-intervention levels during the washout, it is worth noting that they did not remain significantly higher than baseline, indicating that continued supplementation is required to maintain clinically relevant microbiota counts, at least in the mature population.[26]

Additionally, the composition and function of the gut microbiome is dependent on vitamin D status. Conversely, a dysbiotic microbiome can predispose an individual to vitamin D deficiency due to lowered vitamin D receptor (VDR) expression and thus a reduced capacity to absorb vitamin D adequately.[27] This can be explained, at least in part, by the fact that VDR gene polymorphisms have been shown to alter the gut microbiota at a genetic level, specifically decreasing levels of *lactobacilli* and other butyrate-producing bacteria.[21] Supplementation with probiotics can improve vitamin D status via increased expression of VDR in the gut[18]

Inner Health Probiotic for 50+ Years References

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