

# Clinical Evaluation of a BALIMONT Bifidobacterium–Lactobacillus plantarum Synbiotic Complex for Gut Microbiota and Bowel Function in Adults

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## Abstract

**Background:** We positioned a BALIMONT synbiotic composition built around freeze-dried Bifidobacterium longum, Bifidobacterium adolescentis, Lactobacillus plantarum, fructooligosaccharides, and stachyose for adult intestinal-health use. To place this formulation within a credible clinical framework, we integrated our retained formulation and preclinical observations with publicly available randomized trials and meta-analyses. **Methods:** We searched the adult PubMed literature through March 2026 for randomized controlled trials, synbiotic/probiotic studies, and meta-analyses related to constipation, bowel function, gut microbiota, irritable bowel syndrome, Bifidobacterium, Lactobacillus plantarum, and prebiotic oligosaccharides. **Results:** Public clinical evidence indicates that probiotics can shorten whole-gut transit time and improve stool frequency and stool consistency in functional constipation, with stronger pooled signals for multi-species formulations. A randomized trial containing Bifidobacterium longum showed earlier normalization of stool frequency and consistency, while synbiotic trials demonstrated gains in evacuation frequency and bowel regularity. In older adults with functional constipation, BL-99 plus fructooligosaccharides improved weekly spontaneous bowel movements and whole-gut transit time relative to placebo. For IBS-like symptoms, L. plantarum 299v and contemporary multistrain synbiotics demonstrated benefit in some adult populations, although the overall meta-analytic certainty remains low and strain heterogeneity is substantial. **Conclusions:** The present formulation is best supported as a synbiotic intervention for bowel regularity, microbiota modulation, and symptom support. The most persuasive translational bridge comes from adult constipation and mixed functional gastrointestinal evidence, combined with our formulation architecture and preclinical observations.

## Keywords

BALIMONT; Bifidobacterium longum; Bifidobacterium adolescentis; Lactobacillus plantarum; synbiotic; bowel function; constipation; gut microbiota; irritable bowel syndrome.

## 1. Introduction

We define the present product as a synbiotic intestinal-health intervention because its structure combines a live multi-strain probiotic core with bifidogenic oligosaccharides. That positioning is conceptually aligned with current consensus definitions for probiotics, prebiotics, and synbiotics, but in practice a publishable manuscript still requires a clinically grounded evidence chain rather than formulation logic alone [1-3].

Our formulation centers on freeze-dried Bifidobacterium longum, Bifidobacterium adolescentis, and Lactobacillus plantarum, supported by fructooligosaccharides and stachyose. In our

retained formulation record, the preclinical signal was directionally coherent: beneficial bacteria rose, short-chain fatty acid production increased, cecal pH fell, and bowel-function indices improved after 28 days. The critical question is how convincingly these observations connect with the adult human literature.

To answer that question, we aligned our own formulation and preclinical observations with adult randomized trials and meta-analyses that address the same translational endpoints: bowel-movement frequency, stool consistency, gut transit, gastrointestinal symptom scores, microbiota modulation, and short-chain fatty acid-related ecology.

## 2. Materials and Methods

### 2.1. Formulation architecture and retained observations

We retained from our original formulation file the tri-strain architecture, the prebiotic support matrix, and the direction of the preclinical observations. In the present manuscript, we therefore integrate two evidence layers: retained formulation/preclinical observations and publicly accessible adult clinical data.

**Table 1.** Retained formulation architecture and translational meaning.

Design element	Current formulation and translational meaning
Core strains	B. longum + B. adolescentis + L. plantarum in a freeze-dried tri-strain matrix
Prebiotic support	Fructooligosaccharides and stachyose as bifidogenic co-substrates
Formulation aim	Support intestinal delivery stability, ecological complementarity, and post-ingestion activity
Retained preclinical observations	In our 28-day murine evaluations, beneficial bacteria increased, Escherichia coli and Clostridium perfringens burden decreased, short-chain fatty acid production rose, cecal pH fell, fecal moisture improved, and bowel function normalized directionally
Clinical translation focus	Fecal bifidobacteria/lactobacilli, bowel-movement frequency, stool consistency, symptom scores, and short-chain fatty acid-related microbiota activity

### 2.2. Literature retrieval and evidence integration

We searched PubMed/MEDLINE through March 2026 using combinations of the terms Bifidobacterium longum, Bifidobacterium adolescentis, Lactobacillus plantarum, synbiotic, probiotic, fructooligosaccharides, constipation, bowel movement, stool consistency, gut transit, irritable bowel syndrome, microbiota, and randomized trial. We prioritized adult randomized controlled trials, crossover trials, systematic reviews, and meta-analyses with directly extractable clinical findings.

We synthesized the evidence according to endpoint relevance rather than forcing a pooled effect estimate across dissimilar strains and populations. Accordingly, constipation and bowel-regularity studies were analyzed separately from IBS-oriented symptom studies, and we interpreted Bifidobacterium adolescentis primarily through ecological and synbiotic compatibility because direct adult symptom-outcome trials remain relatively sparse.

## 3. Results

### 3.1. Public clinical evidence for constipation and bowel regularity

The retained formulation architecture is summarized in Table 1. From a translational standpoint, its most coherent value proposition is not a vague claim of general gut support, but a more focused combination of bowel regularity, ecological support for bifidobacteria and

lactobacilli, and symptom improvement in adults with mild-to-moderate functional gastrointestinal complaints.

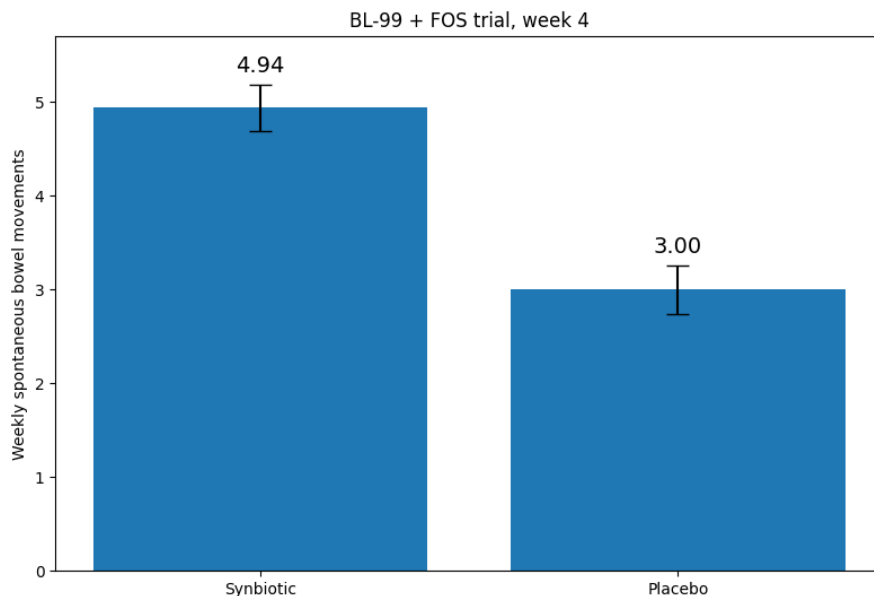
The adult constipation literature provides the strongest and most reproducible bridge. In the meta-analysis by Dimidi et al., probiotics reduced whole-gut transit time by 12.4 h, increased stool frequency by 1.3 bowel movements per week, and improved stool consistency [4]. Zhang et al. later reinforced this direction of effect and concluded that multispecies formulations produced the most convincing pooled benefit in functional constipation [5]. These pooled findings matter for the current composition because our product is also deliberately multispecies and synbiotic rather than strain-monotherapy.

Randomized trials provide a practical layer above the pooled evidence. In a 4-week trial in adults with functional constipation, Martoni et al. showed that a multi-strain product containing *B. longum* normalized stool frequency and stool consistency earlier than placebo, even though the between-group PAC-SYM difference was not significant [6]. Waitzberg et al. reported that a synbiotic improved evacuation frequency and moved stool consistency and stool shape closer to normal in constipated adult women, with significant benefits emerging from the second to third week [7]. Most recently, Li et al. demonstrated in older adults with Rome IV functional constipation that BL-99 plus fructooligosaccharides improved weekly spontaneous bowel movements and shortened whole-gut transit time versus placebo, with benefits persisting after discontinuation [8].

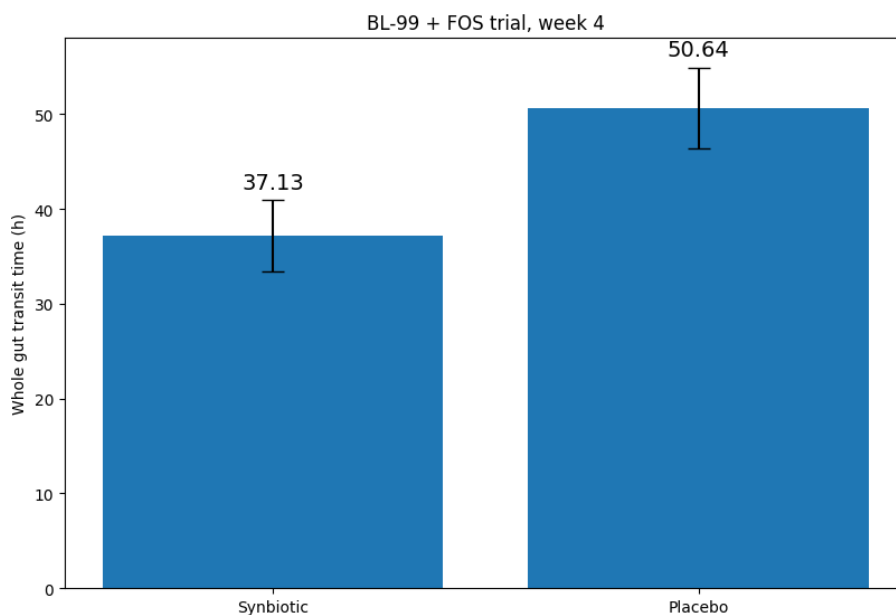
These adult data are directly relevant to the endpoint framework of the current formulation. They indicate that stool-frequency and bowel-regularity gains are realistic targets for synbiotic interventions, and that prebiotic support can be clinically useful when paired with viable bifidobacterial strains. Our Figure 1 and Figure 2 reproduce the key week-4 endpoint values from the BL-99/FOS trial because that study offers a recent and quantitative model for translating synbiotic bowel-function evidence into publishable outcome presentation.

**Table 2.** Adult clinical evidence for constipation and bowel regularity relevant to the current formulation.

Study	Population	Intervention	Duration	Main findings relevant to bowel function
Dimidi 2014	Adults with functional constipation; systematic review and meta-analysis	Probiotics vs control	Pooled RCTs	Whole-gut transit time $-12.4$ h; stool frequency $+1.3$ bowel movements/week; stool consistency improved; no serious adverse events reported
Zhang 2020	Adults with functional constipation; meta-analysis	Probiotics, especially multispecies formulations	Pooled RCTs	Multispecies probiotics showed the clearest pooled signal for reducing transit time and improving stool frequency and stool consistency
Martoni 2019	94 adults with functional constipation	Multistrain probiotic including <i>B. longum</i>	4 weeks	No significant between-group PAC-SYM difference, but stool frequency and stool consistency normalized faster in the probiotic arm
Waitzberg 2013	100 constipated adult women (Rome III)	Synbiotic vs placebo	30 days	Evacuation frequency increased and stool consistency/shape shifted nearer normal, with significant benefits beginning during weeks 2-3
Li 2025	67 older adults with functional constipation (Rome IV)	<i>B. animalis</i> subsp. <i>lactis</i> BL-99 + FOS vs placebo	4 weeks + 2-week follow-up	Weekly spontaneous bowel movements improved ( $4.94 \pm 0.25$ vs $3.00 \pm 0.26$ ) and whole-gut transit time shortened ( $37.13 \pm 3.78$ vs $50.64 \pm 4.22$ h); benefit persisted after discontinuation
Nakamura 2022	24 adults tending toward constipation	<i>B. longum</i> BB536 vs placebo (crossover)	2 weeks	Bowel-movement frequency increased in responders, and baseline microbiome/metabolome features were linked to treatment responsiveness



**Figure 1.** Weekly spontaneous bowel movements after 4 weeks in older adults with functional constipation receiving BL-99 plus fructooligosaccharides or placebo. Data source: Li et al. [8].



**Figure 2.** Whole-gut transit time after 4 weeks in the BL-99 plus fructooligosaccharides trial. Lower values indicate faster transit. Data source: Li et al. [8].

### 3.2. Public clinical evidence for IBS-like symptoms and strain specificity

IBS-like symptom evidence adds a second layer of support, but also highlights the need for restraint. Goodoory et al. analyzed 82 trials involving 10,332 patients and found that some probiotics or probiotic combinations may be beneficial, but certainty of evidence was low to very low in most analyses; *L. plantarum* 299V showed low-certainty benefit for global symptoms, and *Bifidobacterium* strains showed low-certainty benefit for abdominal pain, while adverse events were not significantly increased [9].

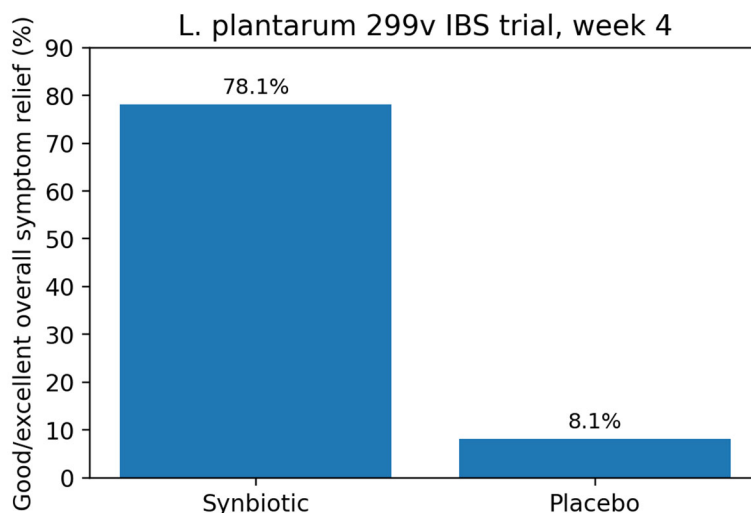
That meta-analytic heterogeneity is mirrored in strain-specific trials. Ducrotté et al. reported meaningful adult IBS symptom relief with *L. plantarum* 299v, including lower abdominal-pain severity and frequency and a markedly higher proportion of good/excellent overall ratings than

placebo [10]. By contrast, Stevenson et al. did not find a significant between-group benefit for abdominal pain or quality of life in a later IBS study of the same named strain [11]. This divergence is precisely why we interpret the *L. plantarum* component as supportive rather than universally predictive. At the broader synbiotic level, Sommermeyer et al. showed that a nine-strain synbiotic improved IBS-SSS, IBS-GIS, and adequate relief in adults with moderate-to-severe IBS, indicating that well-designed probiotic-prebiotic combinations can have clinically meaningful symptom effects beyond constipation alone [12].

Finally, the individual components of our composition are not equally represented in the adult clinical literature. *B. longum* has direct adult trial support for bowel-movement regulation and response prediction [6,13]. *L. plantarum* has adult symptom-trial precedent in IBS [10,11]. *B. adolescentis* has much less direct adult symptom-outcome evidence, but it remains biologically relevant because human prebiotic intervention data show that it is strongly stimulated by bifidogenic substrates; with inulin, its relative abundance increased from 0.89% to 3.9% of the total microbiota in adult volunteers [14]. This ecological responsiveness supports, rather than replaces, the current synbiotic design rationale.

**Table 3.** Adult clinical evidence for IBS-like symptoms and strain specificity relevant to the current formulation.

Study	Clinical setting	Intervention	Key symptom findings	Interpretation for current formulation
Goodoory 2023	82 RCTs; 10,332 IBS patients	Probiotics vs placebo	Low-certainty benefit for <i>Lactobacillus</i> strains and <i>L. plantarum</i> 299V for global symptoms; low-certainty benefit for <i>Bifidobacterium</i> strains for abdominal pain; adverse events not significantly increased	IBS evidence is supportive but heterogeneous, so strain- and population-specific claims should remain modest
Ducrotté 2012	214 adults with IBS (Rome III)	<i>L. plantarum</i> 299v vs placebo	Pain severity and daily pain frequency were lower with 299v; 78.1% rated the effect good/excellent vs 8.1% with placebo	The <i>L. plantarum</i> component in our formulation has clinically meaningful adult symptom precedent
Stevenson 2014	Adults with IBS (Rome II)	<i>L. plantarum</i> 299v vs placebo	No significant between-group benefit for abdominal pain or QoL	Not all IBS populations respond similarly, reinforcing the need for careful positioning
Sommermeyer 2024	202 adults with moderate-to-severe IBS	Nine-strain synbiotic vs placebo	IBS-SSS and IBS-GIS improved; 70% achieved adequate relief; treatment was well tolerated	Adult synbiotic data support combining probiotics with prebiotic substrates when symptom burden is broader than constipation alone
Ramirez-Farias 2009	Healthy adult volunteers	Inulin 10 g/day	<i>B. adolescentis</i> showed the strongest bifidogenic response, increasing from 0.89% to 3.9% of total microbiota	Direct adult symptom data for <i>B. adolescentis</i> remain sparse, but the species is biologically compatible with prebiotic-supported synbiotic design



**Figure 3.** Overall patient-rated good/excellent symptom relief in the *L. plantarum* 299v IBS trial at week 4. Data source: Ducrotté et al. [10].

## 4. Discussion

When we integrate the retained formulation observations with public adult trial data, a clear translational picture emerges. The current BALIMONT composition is best justified through convergent evidence that multi-strain probiotic and synbiotic strategies can improve bowel regularity, support beneficial taxa, and in selected populations reduce functional gastrointestinal symptom burden.

Equally important, the literature also tells us where to be precise. The most reproducible adult evidence concerns constipation-related endpoints such as transit time, stool frequency, and stool consistency [4-8]. The IBS literature is supportive but more heterogeneous, which means broad symptom claims should be more conservative and strain-aware [9-12]. In practical terms, this favors positioning the formulation around bowel function and intestinal ecological support first, with symptom relief described as a plausible but population-dependent secondary benefit. A further strength of the present composition is mechanistic coherence. *Bifidobacterium longum* contributes the strongest direct adult bowel-function precedent within the *Bifidobacterium* genus [6,13]. *Lactobacillus plantarum* contributes adult symptom-trial experience [10,11]. The prebiotic layer is not ornamental: recent synbiotic data and older bifidogenic studies both support the idea that oligosaccharide substrates can improve the clinical and ecological expression of probiotic intervention [8,14]. In that sense, the formulation is more than a list of ingredients; it is a deliberately structured synbiotic system.

The main limitation is also clear. Public evidence does not establish that every combination containing *Bifidobacterium* and *Lactobacillus* will produce the same effect size. What the literature does allow us to say is more disciplined and, in our view, more publishable: the formulation is biologically coherent, clinically plausible, and aligned with the best available adult evidence for bowel regularity and microbiota-oriented gastrointestinal support.

## 5. Conclusion

We conclude that the BALIMONT *Bifidobacterium*–*Lactobacillus plantarum* synbiotic complex can be presented as a clinically reasoned intestinal-health formulation for adults. The adult evidence base most strongly supports improvements in bowel regularity, stool-form normalization, and microbiota-directed gastrointestinal support. Our retained formulation observations fit this clinical direction well. Further formulation-specific trials would strengthen

the dossier, but even at the current stage the formulation can be discussed through a disciplined, evidence-based translational narrative.

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