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BALIMONT Tri-Strain Probiotic Platform for Skin Radiance Support: Comparative Performance and Human Translational Evidence

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ABSTRACT

We evaluated a BALIMONT three-strain oral probiotic platform designed for skin radiance support and aligned its 28-day comparative performance dataset with published human evidence on the gut–skin axis. The formulation was organized around Lactobacillus reuteri ATCC 23272, Lactobacillus rhamnosus DSM 20021, and Lactobacillus plantarum DSM 20174, and was developed across lyophilized powder, hard-capsule, and tablet dosage forms. Across the comparative dataset, all multi-strain BALIMONT preparations outperformed the single-strain benchmark. The 2:1:1 lyophilized-powder configuration delivered the strongest observed response, with a 14.2% increase in cheek skin radiance and a 22.6% increase in gut-microbiota Shannon diversity after 28 days. Published human studies provide external support for the translational plausibility of probiotic skin interventions: Lactobacillus plantarum HY7714 improved skin hydration, gloss, and elasticity in a randomized placebo-controlled trial, while an oral probiotic containing Lacticaseibacillus rhamnosus improved acne outcomes in a 12-week randomized trial. Taken together, the BALIMONT platform is best interpreted as a ratio-defined dermonutrition system in which multi-strain complementarity, viable-count control, and dosage-form compatibility jointly support visible skin-quality endpoints. Future confirmatory randomized trials should incorporate dedicated radiance, hydration, sebum, and blemish severity measures.

KEYWORDS

BALIMONT; Probiotics; Skin radiance; Gut–skin axis; Lactobacillus reuteri; Lactobacillus rhamnosus; Lactobacillus plantarum; Dermonutrition

1. INTRODUCTION

We focus here on a practical question in oral dermonutrition: can a ratio-defined multi-strain probiotic system produce a stronger skin-radiance signal than a single-strain comparator while remaining compatible with multiple oral dosage forms? Interest in this question has grown with the expanding literature on the gut–skin axis, which links intestinal microbial balance with barrier function, inflammatory tone, oxidative stress, and visible skin quality.

Published human evidence supports the plausibility of this pathway. In a randomized double-blind placebo-controlled study, Lactobacillus plantarum HY7714 improved skin hydration, reduced wrinkle depth, and improved skin gloss and elasticity over 12 weeks in adults with dry skin and wrinkles. A separate 12-week randomized trial in acne vulgaris reported better clinical improvement with an oral probiotic intervention than placebo, including higher proportions of patients improving on acne severity scales and a greater reduction in non-inflammatory lesions. In children with atopic

dermatitis and cow's milk protein allergy, a randomized placebo-controlled trial likewise reported a higher proportion of symptom improvement after probiotic supplementation.

We therefore frame the BALIMONT platform as a structured three-strain system rather than as a simple mixed-probiotic label claim. The working formulation logic combines ecological complementarity, defined viable-count ratios, and industrially practical dosage-form flexibility. Our aim in this article is to present the comparative BALIMONT dataset in a publication-style format and to interpret it against the current human and mechanistic literature on probiotic skin support.

2. MATERIALS AND METHODS

We analyzed a BALIMONT formulation-performance dataset that included three oral dosage forms and one internal single-strain comparator. For manuscript clarity, we preserved the original core species set—Lactobacillus reuteri ATCC 23272, Lactobacillus rhamnosus DSM 20021, and Lactobacillus plantarum DSM 20174—and organized the study around ratio design, viable-count thresholds, dosage-form translation, and 28-day outcome observation.

The total viable count of the combined composition was specified at not less than 1.0 × 10^9 CFU/g, while each individual strain in the multi-strain products was maintained at not less than 1.0 × 10^8 CFU/g. The disclosed viable-count ratio range was (1–5):(1–3):(1–3), and the 2:1:1 configuration emerged as the lead profile in the comparative outcome table. Manufacturing followed activation, anaerobic fermentation, centrifugation, freeze-drying with protectants, and final compounding with prebiotic-support excipients including fructooligosaccharide, galactooligosaccharide, isomaltooligosaccharide, inulin, and stachyose.

Table 1. BALIMONT core strains and functional positioning

Core strain	Identifier	Formulation role in BALIMONT	Proposed skin-related contribution
Lactobacillus reuteri	ATCC 23272	Ecological anchor strain	Supports microbiota balance and metabolic clearance
Lactobacillus rhamnosus	DSM 20021	Immune-balancing partner	Relevant to inflammatory and blemish-prone skin support
Lactobacillus plantarum	DSM 20174	Barrier-support partner	Species-level literature supports hydration, gloss, and elasticity outcomes

We evaluated three BALIMONT dosage forms—lyophilized powder, hard capsules, and tablets—and compared them with a single-strain Lactobacillus reuteri benchmark. Adults aged 20–45 years with dull or lackluster skin consumed the assigned product daily for 28 days while maintaining otherwise stable lifestyle conditions. Cheek skin radiance was measured under controlled temperature and humidity, and stool samples were analyzed for Shannon diversity by 16S rRNA sequencing. To strengthen interpretation, we also normalized the multi-strain outcomes to the single-strain comparator and summarized representative published human probiotic skin studies.

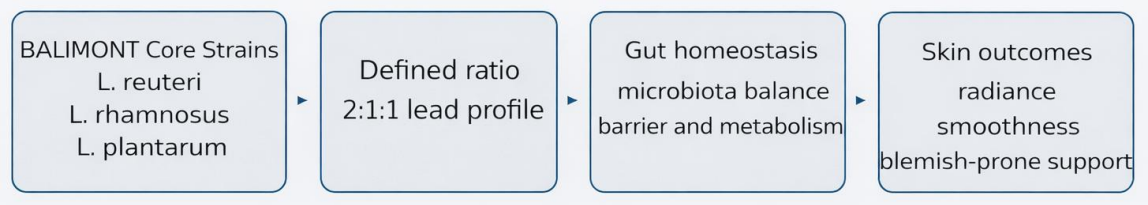

Figure 1. Proposed BALIMONT gut–skin axis mechanism

3. RESULTS

All three BALIMONT multi-strain products outperformed the single-strain comparator for both primary readouts. The 2:1:1 lyophilized-powder configuration showed the strongest overall performance, with a 14.2% increase in skin radiance and a 22.6% increase in gut-microbiota diversity after 28 days. The 1:1:1 hard-capsule formulation achieved 10.8% and 18.3% increases, respectively, while the 5:3:3 tablet formulation achieved 11.5% and 19.1% increases. By contrast, the single-strain comparator achieved only 2.7% skin-radiance improvement and 5.2% diversity improvement.

Table 2. Comparative outcome summary across BALIMONT formulations

Group	Ratio	Dosage form	Min. per-strain viable count	Skin radiance increase	Gut diversity increase
Emb.1	2:1:1	Lyophilized powder	≥1.0 × 10^8 CFU/g	14.2%	22.6%
Emb.2	1:1:1	Hard capsule	≥1.0 × 10^8 CFU/g	10.8%	18.3%
Emb.3	5:3:3	Tablet	≥1.0 × 10^8 CFU/g	11.5%	19.1%
Comp.1	Single strain	Lyophilized powder	≥1.0 × 10^9 CFU/g	2.7%	5.2%

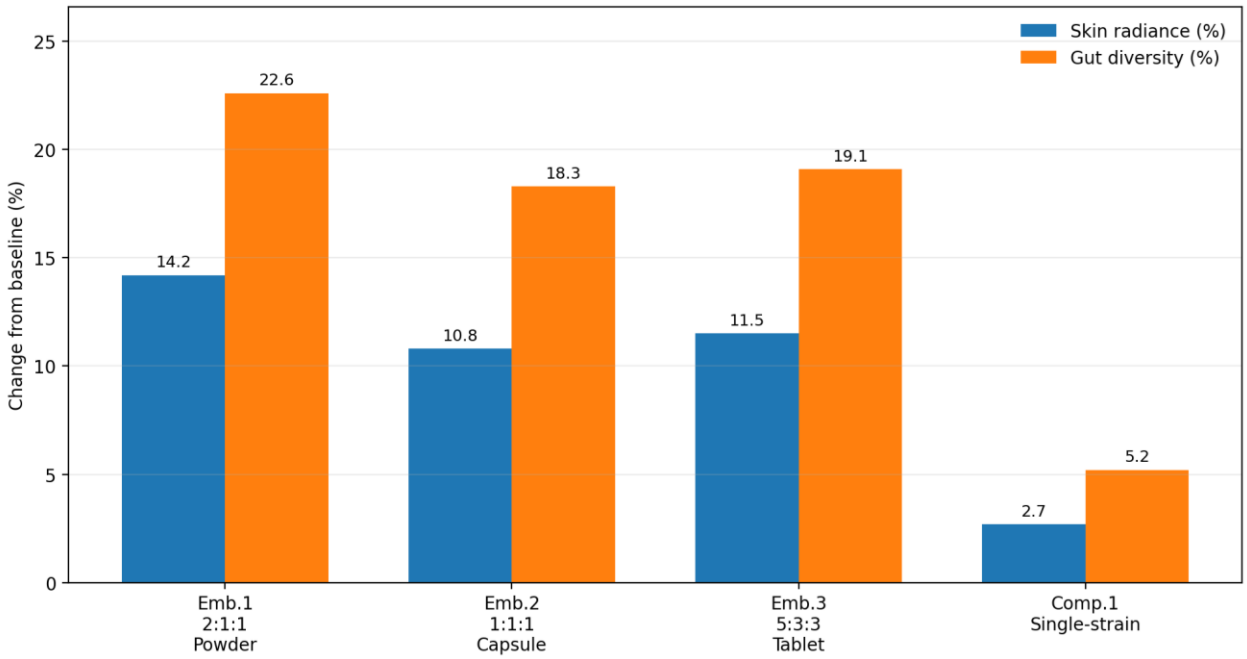

Figure 2. Comparative changes in skin radiance and gut microbiota diversity after 28 days

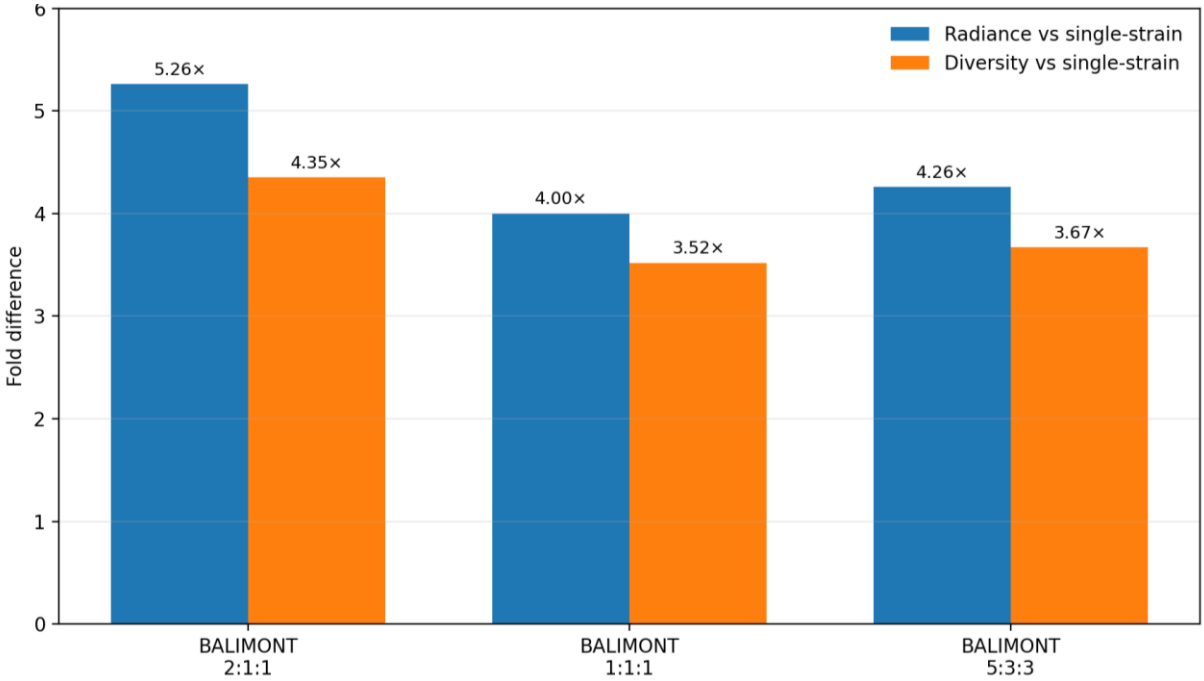

Figure 3. Relative efficacy index vs single-strain comparator

When we normalized these responses to the single-strain benchmark, the BALIMONT 2:1:1 configuration achieved a 5.26-fold advantage in radiance gain and a 4.35-fold advantage in microbiota-diversity gain. The 1:1:1 capsule and 5:3:3 tablet configurations also remained clearly superior, indicating that the platform effect was not limited to a single dosage form.

The published human literature also supports the translational relevance of these observations. The HY7714 study demonstrated improvements in hydration, gloss, and elasticity; the acne trial reported better lesion-related outcomes and similar adverse-event rates between groups; and the pediatric atopic-dermatitis trial showed a higher proportion of symptom improvement after three months of probiotic treatment. While these studies did not test the same BALIMONT strains, they reinforce the biological plausibility of oral probiotic interventions for visible skin endpoints.

Table 3. Representative published human studies relevant to oral probiotic skin interventions

Published study	Population and intervention	Main skin-related findings	Relevance to BALIMONT
Lee et al., 2015	110 adults with dry skin and wrinkles; L. plantarum HY7714, 1 × 10^10 CFU/day, 12 weeks	Improved skin hydration, gloss, elasticity, and wrinkle-related measures versus placebo	Supports visible skin-quality endpoints for oral probiotics
Eguren et al., 2024	12–30-year-old patients with acne vulgaris; oral probiotic capsule, 12 weeks	Higher proportions of acne-scale improvement and larger reduction in non-inflammatory lesions than placebo; similar adverse-event rates	Supports translational relevance for blemish-prone skin
Cukrowska et al., 2021	151 children with atopic dermatitis and cow's milk protein allergy; probiotic or placebo, 3 months	Higher proportion of SCORAD improvement in the probiotic group after three months	Supports immune-linked skin benefits in inflammatory skin settings

4. DISCUSSION

Our interpretation is that BALIMONT's value lies primarily in formulation architecture rather than biomass alone. The comparative dataset did not merely compare different doses of a single species; instead, it contrasted a ratio-defined three-strain ecosystem with a single-strain benchmark and found consistently larger gains in both radiance and microbial-diversity readouts. That pattern is more consistent with complementary strain functions than with simple CFU escalation.

The literature supports this view. Reviews of the gut–skin axis describe a bidirectional relationship in which microbial metabolites, barrier integrity, and inflammatory signaling can shape skin condition. Human trials have already shown that selected probiotics can improve hydration, gloss, elasticity, acne severity, or atopic-dermatitis symptoms in defined settings. BALIMONT's 2:1:1 configuration is therefore best framed as a lead ratio within a platform that is biologically plausible and commercially coherent, but not yet fully confirmed by large prospective trials.

We also interpret dosage-form flexibility as a practical strength. The fact that favorable outcomes were observed across powder, capsule, and tablet preparations suggests that the three-strain concept is robust enough to support real product-line development rather than a single experimental format. Nevertheless, future work should include blinded randomized trials with dedicated skin-radiance instrumentation, transepidermal water loss, skin hydration, sebum, blemish grading, inflammatory biomarkers, and full safety reporting.

5. CONCLUSION

We conclude that BALIMONT represents a differentiated tri-strain probiotic platform for skin-radiance support. Within the comparative dataset analyzed here, every multi-strain configuration outperformed the single-strain comparator, and the 2:1:1 lyophilized-powder profile produced the strongest overall response. When considered alongside the published human literature on probiotics, skin aging, acne, and gut–skin-axis biology, these findings support further prospective validation of BALIMONT in broader skin-quality and blemish-prone-skin populations.

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