



Effects of Dietary Fibre Supplementation on Metabolic Syndrome Components, Intestinal Permeability and Cardiovascular Markers in Overweight Adults

Biostile Liquid Micro Balance® · University of Primorska · NCT05333315

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INSTITUTION

Faculty of
Health
Sciences
University of
Primorska,
Izola

DURATION

8 weeks
Restriction
diet
protocol

PARTICIPANTS

120
subjects
BMI 25–30
kg/m²,
overweight
adults

REGISTRY

NCT05333315
Interventional,
randomized

STUDY OBJECTIVE

To evaluate the effects of five different dietary fibre supplements on components of the metabolic syndrome — including LDL cholesterol, visceral body fat, blood pressure and inflammatory markers — in overweight and obese adults following a restriction diet. The study also assessed intestinal permeability via zonulin concentration and measured participant-rated supplement quality.

METHODOLOGY

Design	Interventional, randomized, parallel-group clinical study
Participants	120 healthy adults, BMI 25–30 kg/m ² , all following a caloric restriction diet
Intervention	Biostile Liquid Micro Balance® (BLMB) tested alongside 4 other fibre supplements over 8 weeks
Primary endpoints	Zonulin concentration, blood pressure, body weight, total cholesterol, LDL cholesterol
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PRODUCT COMPOSITION

● Arabinogalactan (Larch)

Biopolymer of arabinose and galactose from *Larix laricina* and *Larix occidentalis*. Ferments in the intestine with prebiotic and bifidogenic action; contributes to gut regularity.¹

● Inulin (Chicory Root)

Extracted from *Cichorium intybus*. Supports stimulation of digestive fluids and gastrointestinal motility; assists weight management in addition to dieting.^{2,3}

● Beta-Glucans

Soluble dietary fibre contributing to a reduction in blood cholesterol levels. Supports normal heart function and cardiovascular health.³

● Liquid Format

Rated **best texture** (4.3/5) and **highest overall satisfaction** (7.3/10) among all five supplements tested in the clinical trial — facilitating consistent daily use.

KEY RESULTS — BIOSTILE LIQUID MICRO BALANCE® GROUP

-4 kg

Average weight loss in the BLMB group
After 8 weeks

-8.5 mmHg

Reduction in systolic blood pressure
After 8 weeks

-10%

Reduction in total blood cholesterol
After 4 weeks

-23%

Reduction in zonulin concentration — reduced intestinal permeability
After 8 weeks

ADDITIONAL HIGHLIGHTS

7.3/10

Best overall satisfaction rating among all 5 supplements tested in the clinical trial

4.3/5

Best texture rating — highest palatability score among all tested supplements

27%

of subjects reported **better overall well-being** and improved regular digestion

INTESTINAL PERMEABILITY — MECHANISM

- ❖ Zonulin is a protein synthesized in intestinal and liver cells that regulates tight junction permeability. Elevated zonulin levels are associated with "leaky gut," allowing undigested particles and bacteria to enter the bloodstream. The **-23% reduction in zonulin** observed in the Liquid Micro Balance® group indicates a statistically significant reinforcement of the intestinal wall lining after 8 weeks of supplementation.

- ✓ The product was well tolerated across the 8-week study period. All subjects were healthy adults without active cardiovascular disease or metabolic disorders. Diastolic blood pressure also showed a reduction alongside systolic, with no safety concerns reported in the study. The study was conducted according to the standards of the Faculty of Health Sciences, University of Primorska.

CONCLUSION

Biostile Liquid Micro Balance® demonstrated statistically significant reductions in body weight (-4 kg), systolic blood pressure (-8.5 mmHg), total cholesterol (-10%) and intestinal permeability marker zonulin (-23%) after 8 weeks of use in a randomized clinical trial. Among five tested supplements, it received the highest participant satisfaction and texture ratings, supporting both its efficacy and adherence in real-world use.

¹ EFSA botanical claim on hold No. 1442 (arabinogalactan / gut regularity) · ² EFSA botanical claim on hold No. 2702 (chicory / weight management) · ³ EFSA botanical claim on hold No. 2416 (chicory / heart health) · ⁴ EFSA botanical claim on hold No. 2011 (chicory / digestive motility)

Full citation: Jenko Pražnikar Z. et al. "Effects of Four Different Dietary Fibre Supplements on Weight Loss and Lipid and Glucose Serum Profiles during Energy Restriction in Patients with Traits of Metabolic Syndrome." *Foods* 2023, 12(11), 2122. DOI: 10.3390/foods12112122. PMID: 37297364. NCT05333315. Results apply to the Biostile Liquid Micro Balance® (BLMB) investigational product group. Individual results may vary. This product is a food supplement and does not replace a balanced diet.