WHITE PAPER

# EnzyMatrix

## A Broad-Spectrum Digestive Enzyme System for Multi-Substrate Digestive Support

### Technical premise

Modern mixed meals contain proteins, starches and other carbohydrates, fats, lactose, legume oligosaccharides and cereal-derived fibers. A broad-spectrum enzyme system is therefore designed around substrate coverage rather than reliance on a single digestive activity.

EnzyMatrix combines proteases, carbohydrases, lactase, lipase, beta-glucanase and alpha-galactosidase to provide complementary digestive activities across these food components.

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Version 1.0 | August 2026

**Document status:** Technical/marketing white paper. Product-specific clinical efficacy claims require product-specific substantiation.

# Executive Summary

EnzyMatrix is a food-grade, broad-spectrum digestive enzyme blend developed for dietary supplement applications. Its formulation is designed to complement normal gastrointestinal digestion by supplying multiple enzyme activities that act on distinct classes of dietary substrates. The product profile supplied by SD Biocare identifies proteases, carbohydrases, lactase, lipase, beta-glucanase and alpha-galactosidase as active enzyme categories.

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| **Design logic** | Multiple complementary enzymes address multiple food substrates in the same meal. |
| **Consumer relevance** | The blend is positioned for digestive wellness, mixed-meal digestion, lactose digestion and support for foods rich in fermentable oligosaccharides. |
| **Evidence context** | Human studies of lactase, alpha-galactosidase and other multienzyme preparations support the biological plausibility of selected digestive-enzyme approaches; these studies did not evaluate EnzyMatrix itself. |
| **Quality profile** | The supplied product information describes a food-grade powder manufactured in FSSC 22000-certified facilities, with selected active ingredients described as Kosher and Halal certified. |
| **Critical claim principle** | Mechanism-based structure/function language is appropriate; treatment, cure, disease-management or comparative efficacy claims should not be used without suitable product-specific evidence and regulatory review. |


# 1. The Digestive Challenge: One Meal, Many Substrates

Human digestion depends on coordinated mechanical processing, gastric and pancreatic secretions, brush-border enzymes, bile and intestinal transport. A typical mixed meal presents several chemically different substrates simultaneously. No single enzyme activity can hydrolyze all of them.

| Protein | Starches & carbohydrates | Dietary fat | Lactose | Legume oligosaccharides | Cereal beta-glucans |
|---|---|---|---|---|---|
| **Proteases** | **Carbohydrases** | **Lipase** | **Lactase** | **Alpha-galactosidase** | **Beta-glucanase** |

This substrate-to-enzyme matching is the core formulation rationale for EnzyMatrix. The objective is not to replace normal digestive physiology, but to provide exogenous enzyme activities that can act on relevant food components during gastrointestinal transit.

## 2. EnzyMatrix Formulation Architecture

The formulation can be viewed as six complementary functional modules. The descriptions below state biochemical roles and intended digestive-support functions; they should not be interpreted as proof of clinical efficacy for the finished EnzyMatrix formulation.

| Enzyme category | Primary substrate | Biochemical role | Formulation rationale |
|---|---|---|---|
| **Proteases** | Dietary proteins | Hydrolyze peptide bonds, producing smaller peptides and amino-acid-containing fragments. | Provides protein-directed activity across mixed meals. |
| **Carbohydrases** | Starch and other digestible carbohydrates | Hydrolyze glycosidic linkages in carbohydrate substrates. | Extends activity beyond protein and fat digestion. |
| **Lipase** | Triglycerides / dietary fats | Hydrolyzes ester bonds in triglycerides to generate smaller lipid digestion products. | Targets the lipid fraction of meals. |
| **Lactase** | Lactose | Hydrolyzes lactose into glucose and galactose. | Provides a targeted mechanism for lactose digestion. |
| **Alpha-galactosidase** | Raffinose-family oligosaccharides | Cleaves terminal alpha-galactosyl residues in selected oligosaccharides found in legumes and some vegetables. | May reduce the quantity of certain poorly digested fermentable substrates reaching the colon. |
| **Beta-glucanase** | Beta-glucans in cereals and other foods | Hydrolyzes beta-glucan linkages, reducing polymer size. | Broadens substrate coverage toward selected cereal-derived fibers. |

## 3. Why a Broad-Spectrum Blend?

**Complementarity.** Each enzyme class has substrate specificity. Combining multiple activities allows a single formulation to address a wider range of meal components than a single-enzyme supplement.

**Meal-to-meal variability.** The relative amounts of protein, fat, dairy, grains, legumes and fiber change substantially between meals. Broad substrate coverage is therefore a rational design feature for general digestive-support positioning.

**Targeted plus general support.** Lactase and alpha-galactosidase provide targeted mechanisms for two well-defined substrate classes, while proteases, carbohydrases and lipase support the principal macronutrients.

**Formulation practicality.** A premixed enzyme system can simplify finished-dose development for capsules and other dietary-supplement formats, provided activity, stability, compatibility and dose are verified in the final dosage form.

# 4. Human Evidence Relevant to the Enzyme Categories

Published human research supports selected digestive enzyme mechanisms. Importantly, the studies summarized here evaluated other enzyme preparations, not EnzyMatrix. They therefore support biological plausibility and category context, but they do not establish product-specific outcomes.

| Evidence area | Study design / population | Key observation | Relevance and limitation |
|---|---|---|---|
| **Lactase** | Randomized, double-blind, crossover placebo-controlled study in adults with lactose intolerance (Baijal & Tandon). | Lactase reduced symptoms and hydrogen breath excretion after lactose challenge. | Directly supports the lactase mechanism; does not establish outcomes for a multienzyme product or for all consumers. |
| **Alpha-galactosidase** | Human intervention after a fermentable carbohydrate-rich meal (Di Stefano et al.). | Higher-dose alpha-galactosidase reduced breath hydrogen and flatulence severity. | Supports targeted digestion of selected oligosaccharides; response depends on food substrate, dose and individual factors. |
| **Alpha-galactosidase** | Double-blind crossover study after a bean-containing meal (Ganiats et al.). | Fewer flatulence events were observed with alpha-galactosidase versus placebo over follow-up. | Supports a food-specific mechanism; bloating and pain did not differ in that study. |
| **Multienzyme complex** | Randomized, double-blind, placebo-controlled study in functional dyspepsia (Majeed et al.). | The tested proprietary multienzyme complex improved several dyspepsia symptom measures versus placebo. | Category-level evidence only; different formulation, dose and population from EnzyMatrix. |
| **Digestive enzyme blend** | Randomized, double-blind, placebo-controlled clinical trial in functional dyspepsia (Ullah et al., 2023). | The tested digestive enzyme supplement improved multiple symptom and quality-of-life measures. | Useful category context; should not be extrapolated as EnzyMatrix efficacy without a product-specific study. |

**Evidence interpretation rule:** Published studies on individual enzymes or other multienzyme products may support rationale, but only data generated with the final EnzyMatrix formulation at its marketed dose can substantiate product-specific efficacy statements.

# 5. Product Profile and Intended Positioning

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| **Product name** | EnzyMatrix |
| **Category** | Broad-spectrum digestive enzyme blend for dietary supplement applications |
| **Appearance** | Off-white to creamish powder |
| **Active enzyme categories** | Proteases, carbohydrases, lactase, lipase, beta-glucanase, alpha-galactosidase |
| **Bulk density** | 0.6-0.9 g/mL |
| **Solubility** | Described as soluble in water in the supplied product information |
| **Standard presentation** | 25 kg polylined food-grade HDPE containers; filled-capsule and bottle formats are also described as available |
| **Storage** | Cool, dry storage; supplied product information recommends at or below 25°C in unopened containers |

# 6. Claims Framework: Credible Language for Market Use

| Claim level | Examples | Use guidance |
|---|---|---|
| **Mechanism-based** | “Provides enzymes that act on proteins, carbohydrates, fats and lactose.” | Generally the strongest foundation when aligned with verified composition and enzyme activity. |
| **Structure/function** | “Supports digestion of mixed meals.” / “Supports lactose digestion.” | Use only where permitted under the target market’s dietary-supplement regulations and with appropriate substantiation. |
| **Comfort-oriented** | “Supports post-meal digestive comfort.” | Prefer cautious wording; avoid implying guaranteed symptom relief without product-specific evidence. |
| **Avoid without substantiation** | “Clinically proven,” “prevents bloating,” “treats indigestion,” “cures lactose intolerance,” or quantified superiority versus no enzyme. | Requires suitable clinical and regulatory substantiation; disease-treatment/cure language is generally inappropriate for dietary supplements. |

Note: Regulatory classification and allowable claims vary by country. Final labels and promotional materials should be reviewed against the applicable local regulations and the exact finished-product specification.

# 7. Formulation and Finished-Dose Considerations

### Activity units matter more than enzyme mass

Enzymes should be specified by validated activity units using defined assay methods. Milligram quantity alone is not a reliable predictor of digestive activity across different enzyme preparations.

### Gastrointestinal pH profile

Enzyme activity is pH-dependent. Product development should characterize activity across a physiologically relevant pH range rather than relying on a single assay pH.

### Dose-format compatibility

Capsule shell, excipients, moisture, compression force (for tablets), coating systems and storage conditions can affect enzyme activity. Finished-dose stability is therefore distinct from bulk-powder stability.

### Moisture and temperature control

Enzyme products generally require protection from excess moisture and heat. Packaging should be selected to protect the activity profile through the intended shelf life.

### Allergen and source documentation

Raw-material source, carriers, processing aids, allergen status, GMO status and dietary suitability should be verified batch-to-batch and reflected accurately in market claims.

### Assay harmonization

Where multiple enzymes are blended, each key activity should have an appropriate assay and release specification. Total “enzyme blend” weight is insufficient for robust quality control.

**Publication checkpoint:** The supplied EnzyMatrix information does not state individual enzyme activity units or a recommended per-serving dose. These values should be inserted from the current approved specification before any external white paper is presented as a full technical specification.

# 8. Quality, Packaging and Handling

The supplied product information describes EnzyMatrix as a food-grade product for human consumption, produced in FSSC 22000-certified facilities. It also states that active ingredients are Kosher and Halal certified. Standard bulk packaging is described as 25 kg polylined food-grade HDPE containers, with bulk capsule and consumer bottle options available.

As with enzyme powders generally, inhalation of airborne enzyme dust should be avoided. Appropriate occupational controls, personal protective equipment and handling procedures should follow the product Safety Data Sheet and local workplace requirements.

# 9. Potential Product Applications

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| **Daily digestive-support capsules** | Broad-substrate positioning for mixed meals, with activity and serving size tailored to the target market. |
| **Protein-focused nutrition** | Protease-containing digestive support alongside protein powders, meal replacements or high-protein foods. |
| **Dairy-containing meals** | Lactase-containing positioning where the intended use and dose are suitable for lactose digestion support. |
| **Legume- and grain-rich diets** | Alpha-galactosidase and beta-glucanase provide a mechanistic rationale for formulations used with selected legumes, cereals and fiber-rich foods. |
| **Private-label digestive wellness** | The supplied product information describes availability in bulk powder, bulk filled capsules and multiple bottle counts, supporting B2B and finished-dose pathways. |

# 10. Recommended Product-Specific Validation Program

For a stronger technical and commercial evidence package, SD Biocare can generate EnzyMatrix-specific data in a staged program. This approach avoids unsupported efficacy graphics and creates defensible evidence for future sell sheets and customer discussions.

| Stage | Study | Suggested endpoints | Business value |
|---|---|---|---|
| 1 | **Analytical activity mapping** | Individual enzyme activities; assay reproducibility; activity across pH 2-8. | Establishes technical specification and mechanism. |
| 2 | **Simulated digestion / food-matrix testing** | Protein hydrolysis, starch breakdown, lipolysis, lactose hydrolysis and selected oligosaccharide reduction versus control. | Creates product-specific comparative laboratory data. |
| 3 | **Finished-dose stability** | Activity retention in capsules/bottles under real-time and accelerated storage. | Supports shelf-life and packaging decisions. |
| 4 | **Pilot human tolerance study** | GI tolerance, adverse events, acceptability and exploratory digestive-comfort endpoints. | Builds safety/tolerability dossier. |
| 5 | **Randomized controlled human study** | Predefined validated symptom scores and substrate-specific challenge endpoints, with statistical analysis plan. | Can substantiate product-specific efficacy claims if well designed and positive. |

# Conclusion

EnzyMatrix is built on a straightforward formulation principle: mixed meals contain multiple substrate classes, so a digestive-support product can be designed with multiple complementary enzyme activities. Proteases, carbohydrases and lipase provide coverage for the principal macronutrients, while lactase, alpha-galactosidase and beta-glucanase extend the formulation toward specific dairy, legume and cereal substrates.

Published human studies support the biological plausibility of selected enzyme categories, particularly lactase and alpha-galactosidase, and provide broader context for multienzyme supplementation. However, the scientific strength of future EnzyMatrix claims will depend on the exact activity specification, dose, finished-dose stability and product-specific validation. A staged analytical, simulated-digestion and clinical program would convert the current mechanism-led proposition into a stronger evidence-led commercial platform.

**EnzyMatrix: broad substrate coverage, complementary enzyme activities, and a clear pathway toward product-specific evidence.**

# References

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**Product source:** SD Biocare, “Enzymatrix - Extra Strength Blended Enzymes to Support Digestion,” supplied Product Information Sheet, accessed August 2026.

## Scientific and Regulatory Disclaimer

This white paper is intended for technical, business-to-business and educational purposes. It summarizes the formulation rationale of EnzyMatrix and selected published evidence relevant to digestive enzyme categories. Published studies cited in this document evaluated products or enzyme preparations other than EnzyMatrix unless explicitly stated otherwise. Their findings must not be represented as clinical proof of EnzyMatrix efficacy.

EnzyMatrix is positioned as a dietary-supplement ingredient/product and is not intended to diagnose, treat, cure or prevent disease. Claims, labeling, dosage, warnings and regulatory status must be reviewed for each target market and finished product. Exact activity units, serving size, source declarations, allergen status, certificate scope and finished-dose stability should be confirmed against current approved specifications and certificates before external publication.

The supplied product information states that EnzyMatrix should be stored in a cool, dry place, preferably at or below 25°C in unopened containers, and that inhalation of enzyme dust or mist should be avoided. For detailed handling instructions, refer to the current Safety Data Sheet.

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