

# CASE STUDY

Topic: **Gluten-Free Delights: Innovating Traditional Kozunak and Functional Crackers**

Team №7

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## **I. Executive Summary**

This case study highlights the development and market potential of two innovative gluten-free bakery products: a traditional Kozunak sweet bread and low-glycemic crackers. Both products target consumers with gluten intolerance, celiac disease, and health-conscious individuals seeking clean-label, allergen-friendly options. The Kozunak combines a blend of gluten-free flours and natural binders to deliver the classic texture and flavor of this traditional sweet bread, overcoming common challenges in gluten-free baking. Complementing this, the crackers use alternative flours like green banana and are enriched with functional ingredients such as turmeric, psyllium husk, and flaxseed, offering nutritious, low-glycemic snacking. Together, these products meet evolving consumer demands for gluten-free, functional foods with appealing sensory qualities and enhanced nutritional value. The study demonstrates strong market opportunities across Europe and beyond, emphasizing the importance of innovation, ingredient selection, and strategic positioning in the competitive gluten-free segment.

## **II. Introduction**

Celiac disease is a chronic autoimmune and digestive disorder triggered by the ingestion of gluten—a protein found in wheat, barley, and rye. It affects about 1.4% of the global population (Fig. 1), with many cases remaining undiagnosed (Singh et al., 2018; King, Jeong, Underwood, & al., 2020; NIH, 2025). Long-term complications of untreated celiac disease can include osteoporosis, anemia, neurological disorders, and reproductive issues. Additionally, wheat can cause non-immune reactions, including wheat allergy and non-celiac gluten sensitivity (NCGS), which affects up to 13% of the population and shares symptoms with irritable bowel syndrome (IBS) (Cianferoni, 2016; Catassi et al., 2015)(Størdal & Kurppa, 2025). Experts now use the broader term, non-celiac wheat sensitivity (NCWS), to reflect the condition's complexity.

Beyond clinical needs, increasing numbers of consumers are choosing gluten-free diets to manage conditions like IBS, autoimmune disorders, or simply to improve well-being. This growing demand, combined with rising health awareness, has created opportunities for innovative gluten-free foods that deliver on both nutrition and taste.

This case study explores the development of two such products: a low-glycemic, gluten-free cracker formulated with alternative flours (e.g., green banana) and functional ingredients (turmeric, psyllium husk, flaxseed), and gluten-free Kozunak,” a reinterpretation of a traditional sweet bread. These products aim to serve individuals with gluten-related disorders while also appealing to health-conscious consumers.

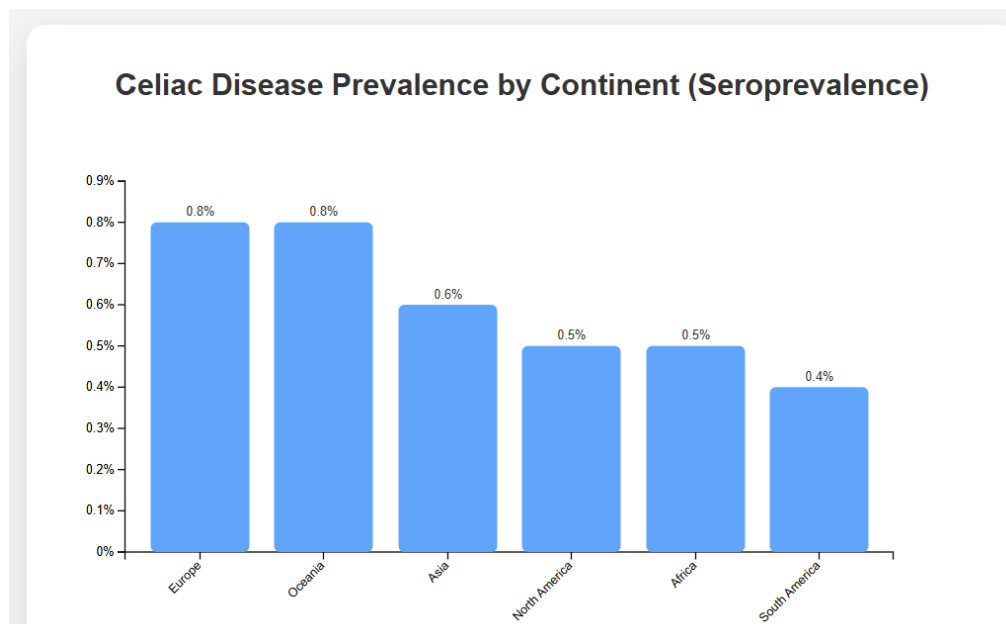


Fig. 1. Data Source: Meta-analyses on global celiac disease prevalence.

The purpose of this case study is to examine the product development process, identify market potential, and assess strategic considerations for launching gluten-free bakery goods that meet sensory expectations and dietary needs. The scope includes research and development, ingredient functionality, consumer trends, product formulation, marketing strategy, and risk analysis. Together, the gluten-free Kozunak and the gluten-free crackers reflect a timely response to evolving dietary patterns and represent a step forward in inclusive, functional food innovation.

### III. Market Analysis:

The target market for the gluten-free Kozunak and snack crackers includes individuals with celiac disease, non-celiac gluten or wheat sensitivity, wheat allergy, and a growing segment of health-conscious consumers adopting gluten-free diets for overall well-being. These consumers prioritize safe, natural, and nutritious products that replicate the sensory experience—especially taste and texture—of traditional wheat-based foods.

This diverse audience shares common preferences: clean-label formulations, functional ingredients, and trustworthy brands. Purchasing behavior is strongly influenced by health concerns, product transparency, availability, and sensory appeal. A significant portion of the target demographic consists of

### Case study

urban adults aged 20 to 45 who lead busy lifestyles and are willing to invest in high-quality, ethical, and convenient food products (Zhang and Chan, 2025).

The gluten-free snack crackers are positioned to meet the needs of active individuals seeking nutritious, portable snacks made with alternative flours (e.g., green banana) and functional ingredients (e.g., flaxseed, turmeric, psyllium). The Kozunak, as a traditional sweet bread, appeals to consumers—particularly those aged 30 and over—who wish to preserve cultural food experiences during holidays and special occasions without compromising dietary restrictions.

Competition in the gluten-free category is most intense in the snack segment, with a wide range of crackers based on rice, corn, almonds, and seeds. These products often emphasize added health benefits such as fiber, protein, or low glycemic index. Brands differentiate through innovation in flavors, textures, and clean-label credentials.

Conversely, the Kozunak occupies a niche within the gluten-free bakery market. While alternatives to holiday breads like panettone exist, an authentic, high-quality gluten-free Kozunak remains largely unavailable. Both products align with market trends favoring functional, “free-from” foods that offer health benefits without sacrificing traditional appeal or eating pleasure.

## IV. Research and Development:

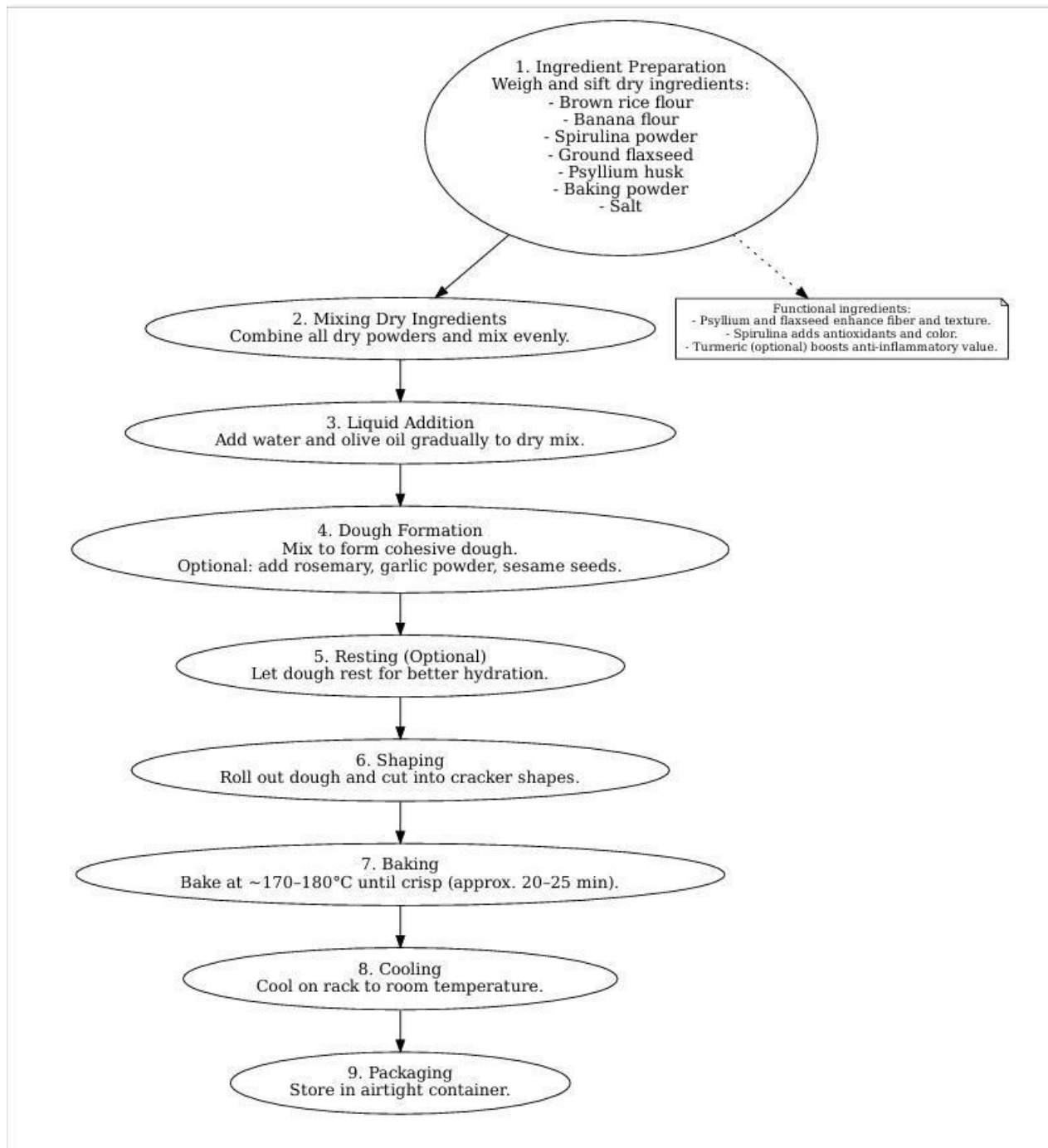
### Gluten-free Crackers

Rice flour is widely used in gluten-free bakery products due to its favorable physicochemical and technological properties. Whole grain or brown rice flour, in particular, enhances the nutritional value of gluten-free formulations (Uivarasan et al., 2024). However, the absence of gluten leads to poor dough elasticity and gas retention, affecting product structure and quality. To address this, improvers such as hydrocolloids, proteins, and emulsifiers are often added. Psyllium husk and flaxseed have proven especially effective as structuring agents, even in low amounts (Radoš et al., 2022; Ren et al., 2021).

Recently, functional ingredients like green banana flour and *Spirulina platensis* have been explored. Banana flour improves dough quality and nutrition through resistant starch and fiber (Zaini et al., 2022), while spirulina enhances texture, protein, and antioxidants, despite adding distinct color and flavor (Nicolíć et al., 2025). This formulation draws from Ovando-Martínez et al. (2009) and OpenAI (2025). The technological scheme for the production of the gluten-free crackers is given in Fig. 2.

**Table 1.** Formulation of gluten-free crackers.

Ingredients	Grams (g)
Brown rice flour	90
Banana flour	30
Spirulina powder	5
Ground flaxseed	10
Psyllium husk powder	2 - 3
Baking powder	3
Olive oil	5
Water	120
Salt	3



**Fig. 2. Technological scheme for the production of gluten-free crackers**

### **Gluten-free Kozunak**

The development of the gluten-free Kozunak required extensive trials with alternative flours and binders to replicate the texture and flavor of traditional Kozunak, but in an alternative without gluten. Green banana flour was selected for binding and neutral taste, lupin flour for protein and elasticity, and fermented buckwheat flour for flavor and digestibility. Potato starch added tenderness, while psyllium husk replaced gluten's structural role. Leavening agents and salt completed the dry mix.

Chia gel served as a secondary binder, with eggs providing structure, and nut milk, maple syrup or honey, and melted cocoa butter enhancing moisture and richness. Apple cider vinegar, vanilla, and orange zest contributed leavening, aroma, and flavor. The detailed recipe for the gluten-free Kozunak is given in Table 2 and the technological scheme for its production is shown on Fig. 3.

The production process follows precise steps. First, chia gel is prepared by soaking seeds in water. Optional, but recommended, is a 12 – hour fermentation of buckwheat flour. Dry ingredients (flours, psyllium husk, baking powder, baking soda, salt) are weighed and sifted. Separately, wet ingredients (eggs, nut milk, cocoa butter, sweetener, apple cider vinegar, vanilla, orange zest, and chia gel) are combined. The wet mixture is gradually incorporated into the dry, mixed until a sticky dough forms (8 – 10 minutes). Dried cherries and chopped pistachios are then gently folded in (2 minutes). The dough is shaped, placed in a baking pan, and proofed in a warm environment (30 – 35 °C) for 60 – 90 minutes to rise. Finally, the kozunak is baked at 170 °C for 50 – 55 minutes, then cooled on a wire rack. Optional decoration with coconut yogurt and syrup can be applied. The finished product can be stored hermetically sealed for up to 4 days at room temperature.

Preliminary tests showed promising results in texture and taste. Further development includes consumer surveys and focus groups to refine sensory qualities, appearance, and overall product appeal.

**Table 2. Recipe: Gluten-Free Kozunak**

<b>Component</b>	<b>Ingredient</b>	<b>Quantity</b>
<b>Dry Mix</b>	Green banana flour	80 g
	Lupin flour	70 g
	Lightly fermented buckwheat flour	50 g
	Potato starch	30 g
	Psyllium husk	10 g
	Baking powder	5 g
	Baking soda	2.5 g
	Salt	3 g
<b>Binding Phase</b>	Chia seeds	14 g
	Water (for chia gel)	90 g

	Eggs (medium, without shells)	2 eggs (100–110 g)
	Warm nut milk	70 g
	Maple syrup or honey	40 g
	Melted cocoa butter	40 g
	Apple cider vinegar	5 g
	Vanilla extract	5 g
	Zest of organic orange	~2–3 g
<b>Filling</b>	Dried cherries	50 g
	Chopped pistachios	40 g
	Coconut sugar	12 g
	Ground cinnamon	2 G





Fig. 3. Technological scheme for the production of Gluten-Free Kozunak

## V. Product Description: (500 words)

This case study presents two innovative gluten-free products designed to address the dietary needs of individuals with celiac disease, gluten sensitivities, and health-conscious consumers seeking nutritious alternatives: **Gluten-Free Crackers** and the **Gluten-Free Kozunak**.

## Gluten-Free Crackers

Crackers are thin, dry, crisp baked goods characterized by low moisture and a brittle, laminated texture (Xu et al., 2020). Unlike some yeast-fermented crackers, this product uses chemical leavening agents exclusively (Manley, 2001). The developed crackers are low-fat and gluten-free, formulated using a blend of green banana flour and brown rice flour to replace conventional wheat flour, offering high dietary fiber content.

Functional ingredients include ground flaxseed and psyllium husk, which act as natural binders to compensate for gluten's absence while enhancing fiber and digestive health (Ren et al., 2021). This combination also allows significant fat reduction without compromising texture or dough handling. Turmeric powder is added for its anti-inflammatory and antioxidant properties, imparting a subtle earthy flavor and golden color.

Minimal oil use (one teaspoon per batch) ensures a low-fat profile, while optional ingredients such as rosemary, garlic powder, and sesame seeds enhance flavor, micronutrient content, and visual appeal. *Spirulina platensis* is incorporated as a bioactive ingredient, enriching the crackers with vitamins, proteins, and antioxidants, contributing health-promoting effects and a distinctive umami flavor and greenish hue (Nicolíć et al., 2025).

## Gluten-Free Kozunak

The gluten-free Kozunak is a soft, moist sweet bread designed to replicate the traditional taste and texture without gluten. Its dry mix combines green banana, lupin, and lightly fermented buckwheat flours, along with potato starch, psyllium husk, baking powder, baking soda, and salt. These flours provide binding, protein, and digestive benefits, with psyllium husk serving as a key natural binder for elasticity and texture.

The binding phase includes chia seed gel (chia seeds soaked in water), eggs, warm nut milk, maple syrup or honey, melted cocoa butter, apple cider vinegar, vanilla extract, and orange zest, which contribute moisture, richness, sweetness, leavening, and aroma.

The filling blends dried cherries, chopped pistachios, coconut sugar, and cinnamon, adding fruity sweetness, crunch, and warm spice notes.

Based on the provided recipe and the approximate weight of the finished product (~618 g), here's the estimated nutritional value per 100 grams of the gluten-free Kozunak:

- 1) Energy Value: 321 kcal (1274 kJ);
- 2) Proteins: 10.3 g;
- 3) Fats: 14.4 g;
- 4) Carbohydrates: 35.8 g;
- 5) Fiber: 8.6 g.

### Case study

These calculations are approximate, based on averaged nutrient data for raw ingredients. Actual values may vary slightly depending on specific product brands, measurement accuracy, and individual differences in the preparation process.

The gluten-free Kozunak is an excellent source of dietary fiber (primarily from psyllium husk and gluten-free flours) and healthy fats (from cocoa butter, chia seeds, and pistachios), offering a delicious and beneficial gluten-free treat.

### Unique Selling Proposition (USP)

Both products differentiate themselves through their clean-label, health-focused formulations and the strategic use of functional ingredients that enhance texture, flavor, and nutritional value. The crackers stand out for their low-fat, high-fiber profile, and inclusion of spirulina, appealing to wellness-driven consumers seeking innovative snacks. The Kozunak's USP lies in its authentic replication of traditional texture and flavor, overcoming the common dryness and crumbliness of many gluten-free breads by utilizing a unique flour blend and natural binders like psyllium husk and chia gel. Together, they fulfill a growing market demand for high-quality, functional gluten-free bakery and snack products.

## VI. Marketing and Promotion:

The marketing strategy for launching the gluten-free Kozunak (Fig. 4) and gluten-free Crackers (Fig. 5) centers on their unique selling propositions: authentic taste and texture for the Kozunak, and a low-fat, nutrient-dense profile for the crackers. The primary target audience includes individuals with celiac disease, gluten sensitivities, and health-conscious consumers pursuing gluten-free and functional food lifestyles. Secondary targets for the crackers also encompass vegans, clean-label seekers, and parents searching for healthier snack options.

Branding will emphasize natural ingredients, quality, and the comforting, wholesome appeal of homemade treats. Packaging will be visually attractive with clear "Gluten-Free" labeling, highlighting key functional ingredients such as green banana flour, lupin, psyllium husk, chia seeds, turmeric, and spirulina. Transparent packaging elements may be used to showcase the product while all labeling will comply with gluten-free regulations, providing detailed ingredient and allergen information.

Pricing will reflect the premium quality of ingredients and specialized gluten-free production processes. While competitive, prices will consider the higher cost of ingredients like green banana and buckwheat flours, cocoa butter, and dried fruits, targeting a niche market willing to pay for superior quality, safety, and taste.



**Fig. 4.** Gluten-free Kozunak





**Fig. 5.** Gluten-free Crackers

Distribution will focus initially on health food stores, specialty grocers, and online platforms, with plans to partner with celiac associations and gluten-free communities. Future expansion into mainstream supermarket “free-from” sections is anticipated. Promotional activities include social media campaigns, influencer collaborations, in-store sampling, and participation in gluten-free expos. Educational content will support consumer awareness around gluten-free baking and product benefits.

### Case study

This approach leverages rising global demand for gluten-free, functional, and low-fat foods, capitalizing on label-conscious consumer trends and the growing e-commerce and health retail sectors (Mintel, 2023; Euromonitor, 2022).

## VII. Financial Analysis:

The gluten-free Kozunak will be produced in 618g units, with ingredient costs ranging from €3.00 to €3.50 per unit, reflecting the use of premium gluten-free flours, nuts, oils, and natural binders. Manufacturing overheads—including labor, energy, packaging, and quality control—are estimated at €2.20 per unit, with an additional 10% contingency (€0.55) for waste and logistics. Total production costs are therefore approximately €5.75 to €6.25 per unit.

The product will launch with a penetration pricing strategy, retailing at €9 to attract early adopters and build market presence. Sales are projected to start at 500 units monthly, growing 15% each month to 1,000 units by month five, increasing revenue from €4,500 to €9,000. Initial gross margins are estimated at 30–35%, improving to 40% as production scales. With a €13,000 investment in development and marketing, break-even is expected within five to six months, with monthly net profits rising from €650 to €3,600 by month six, indicating strong market potential.

For gluten-free crackers packaged in 100g units, raw ingredient costs are roughly €0.45 per unit, with manufacturing overheads conservatively estimated at €0.80 to ensure quality in small-scale production. A 10% contingency (€0.12) covers waste and logistics, resulting in total costs of about €1.37 per package. Positioned as a premium health snack, retail prices range between €3.50 and €4.00. Sales projections start at 1,000 units monthly, growing 15% each month to reach 1,800 units by month six, with revenue increasing from €3,500 to €6,480. Gross margins begin around 30–35% and improve toward 40% as scale and efficiencies grow. With initial investments near €8,000, break-even is anticipated within five to seven months, and monthly profits rising from €450 to €2,600 by month six.

Overall, both products demonstrate strong potential within the growing gluten-free market. With careful cost management, strategic pricing, and gradual sales growth, these projects are well-positioned for sustainable profitability and long-term success.

## VIII. Challenges and Risks:

Developing gluten-free bakery products like crackers and Kozunac involves notable technological and sensory challenges. Gluten imparts essential dough properties such as extensibility and gas retention, which are difficult to mimic using gluten-free flours. Crackers require dough that can be consistently sheeted and layered, while Kozunac demands dough that withstands fermentation without collapsing. Additionally, gluten-free products typically face rapid staling and shorter shelf life due to poor moisture retention, especially critical for Kozunac's soft texture.

### Case study

Consumer expectations add further complexity. Gluten-free items must match the sensory quality of traditional products, yet many consumers are price sensitive and unfamiliar or wary of novel ingredients like hydrocolloids or algae, which may seem artificial.

The gluten-free Kozunak faces these common challenges alongside others: the need for precise quality control to replicate traditional texture, higher ingredient costs requiring premium pricing, potential supply chain disruptions for specialized flours, and overcoming consumer skepticism toward gluten-free baked goods.

To address these risks, the strategy includes rigorous R&D to ensure consistent product quality, securing reliable suppliers, and strong marketing campaigns that highlight the taste and texture benefits. Pricing flexibility and contingency plans, such as alternative ingredient sources and backup recipes, will mitigate supply and market risks. Protecting intellectual property will help maintain a competitive edge.

## XI. Internationalization strategy (max. 250 words)

The gluten-free Kozunak and crackers have strong potential for international expansion due to their inclusive formulations and alignment with global dietary trends, as summarised in Fig. 6. Both products are naturally suited for **Halal, Kosher, vegetarian, and clean-label markets**, offering flexibility for certification and adaptation to regional preferences.

Formulated without alcohol or tallow, both products comply with Halal and Kosher dietary standards. Certification would be obtained through recognized authorities such as the Islamic Food and Nutrition Council of America (IFANCA), the Halal Food Authority (HFA) in the EU and UK, and the Orthodox Union (OU) or Star-K for Kosher compliance. For Kosher certification, eggs must be entirely free from any traces of blood to ensure full conformity with dietary laws. Furthermore, as the formulation contains no wheat, oats, rye, barley, or spelt, it is also suitable for consumption during Passover.

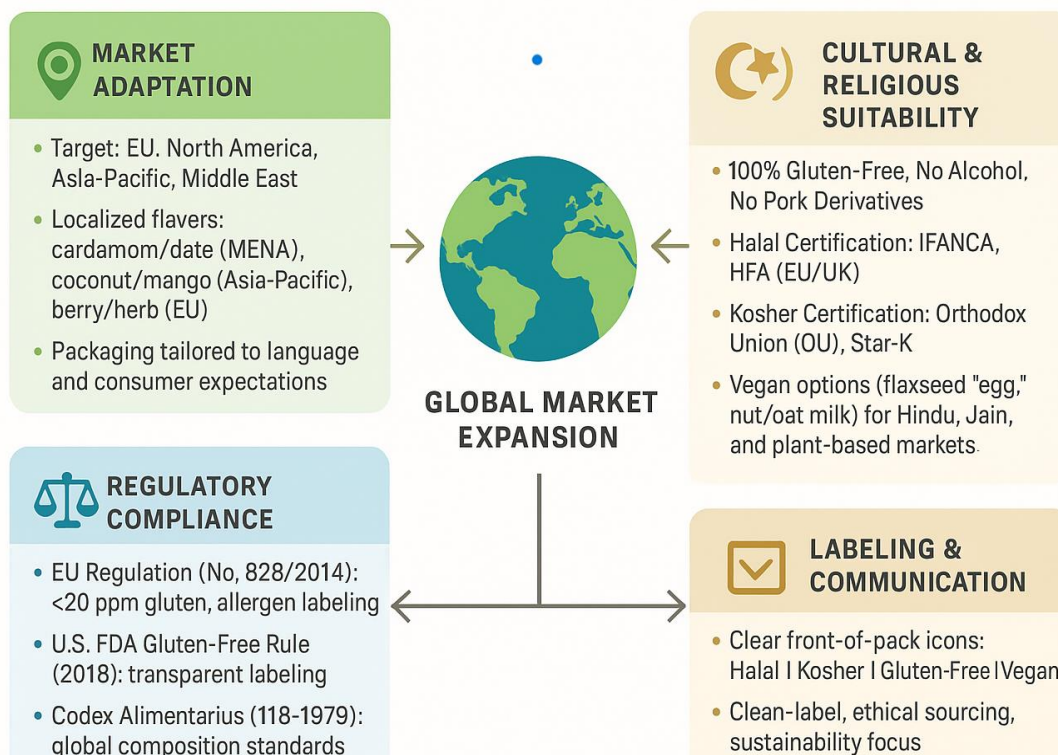
The Kozunak's use of eggs can be modified with plant-based alternatives (e.g., flaxseed, aquafaba) to produce vegan-certified versions suitable for broader religious and cultural markets, including Hindu and Jain consumers.

To ensure regulatory compliance, both products must adhere to gluten-free and labeling standards:

- EU Regulation (No. 828/2014) – gluten content below 20 ppm and mandatory allergen labeling.
- U.S. FDA Gluten-Free Labeling Rule (2013) – ingredient transparency and accurate claims.
- Codex Alimentarius (Codex Stan 118-1979) – global reference for gluten-free and compositional limits.

Culturally adapted flavor variations (e.g., cardamom and dates for the Middle East, tropical fruit notes for Asia-Pacific) and transparent packaging featuring Halal, Kosher, and Gluten-Free symbols will strengthen trust and expand accessibility across diverse international markets.

**Fig. 6. Internationalization Strategy for Gluten-Free Kozunak and Crackers**



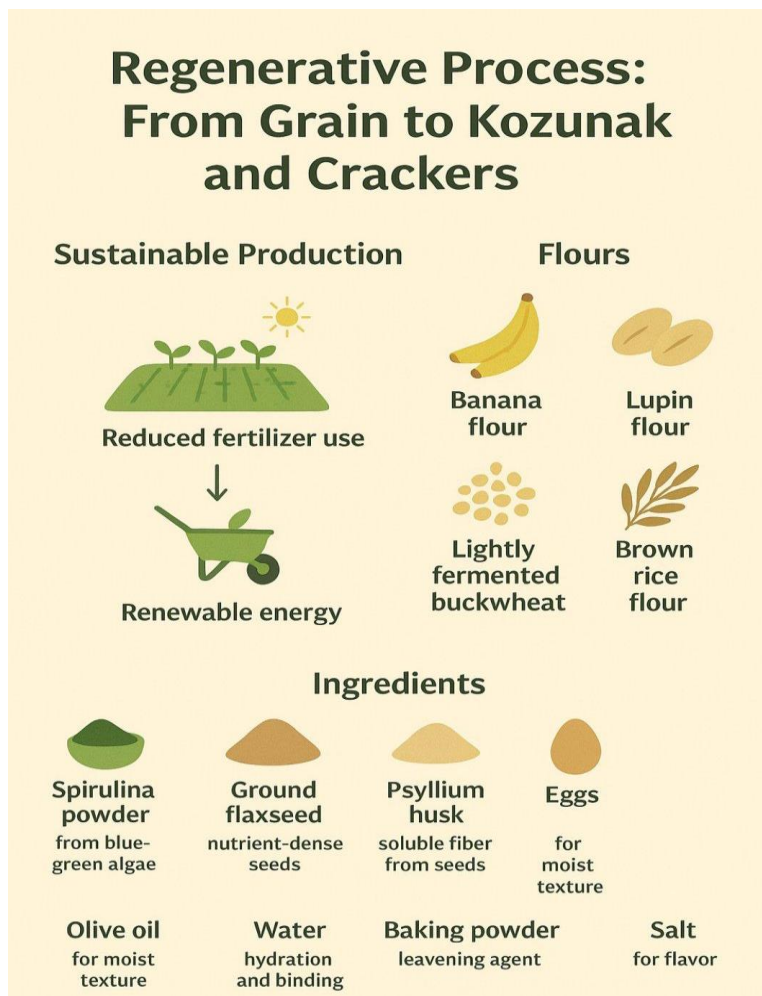
## XII. Sustainability impact (max. 300 words)

The sustainability strategy for the gluten-free *Kozunak* and crackers focuses on minimizing environmental impact across the entire product lifecycle—covering ingredient sourcing, production, packaging, and transportation.

### Ingredients

As illustrated in Fig. 7, both products rely on plant-based and naturally gluten-free raw materials such as green banana, buckwheat, lupin, and flaxseed. Whenever possible, ingredients will be sourced from local or regional suppliers practicing regenerative or low-input farming, which reduces fertilizer dependency, soil erosion, and transport emissions. Green banana flour exemplifies upcycling, transforming surplus or imperfect fruit into functional flour and helping to decrease food waste.

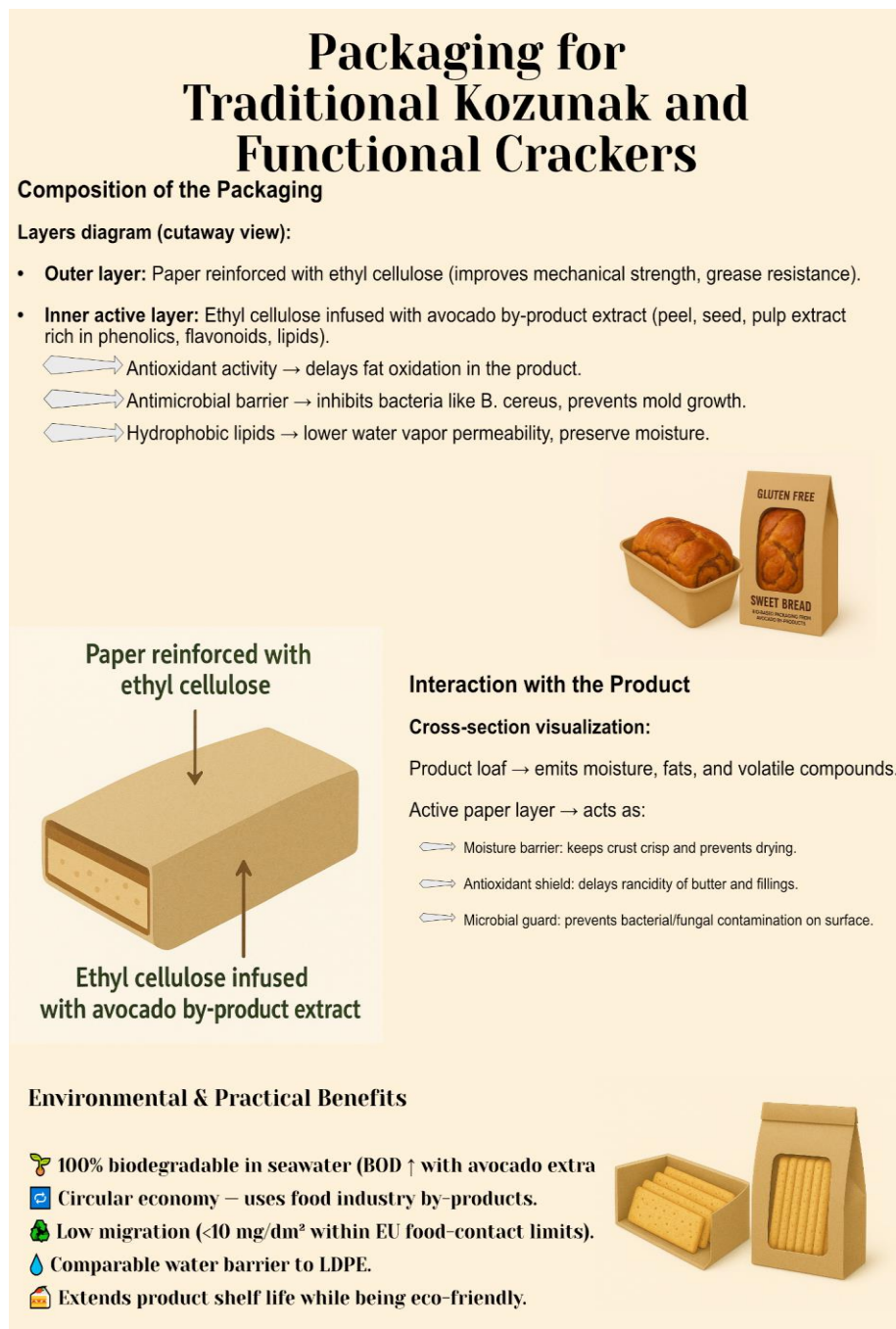




**Fig. 7:** Scheme of the ingredients and products in making kozunak and crackers.

## Production

Future milling and baking operations will prioritize renewable energy (solar and biogas) and implement closed-loop water systems for equipment cleaning. Regular equipment maintenance ensures higher efficiency and lower energy loss, supporting a circular production model.



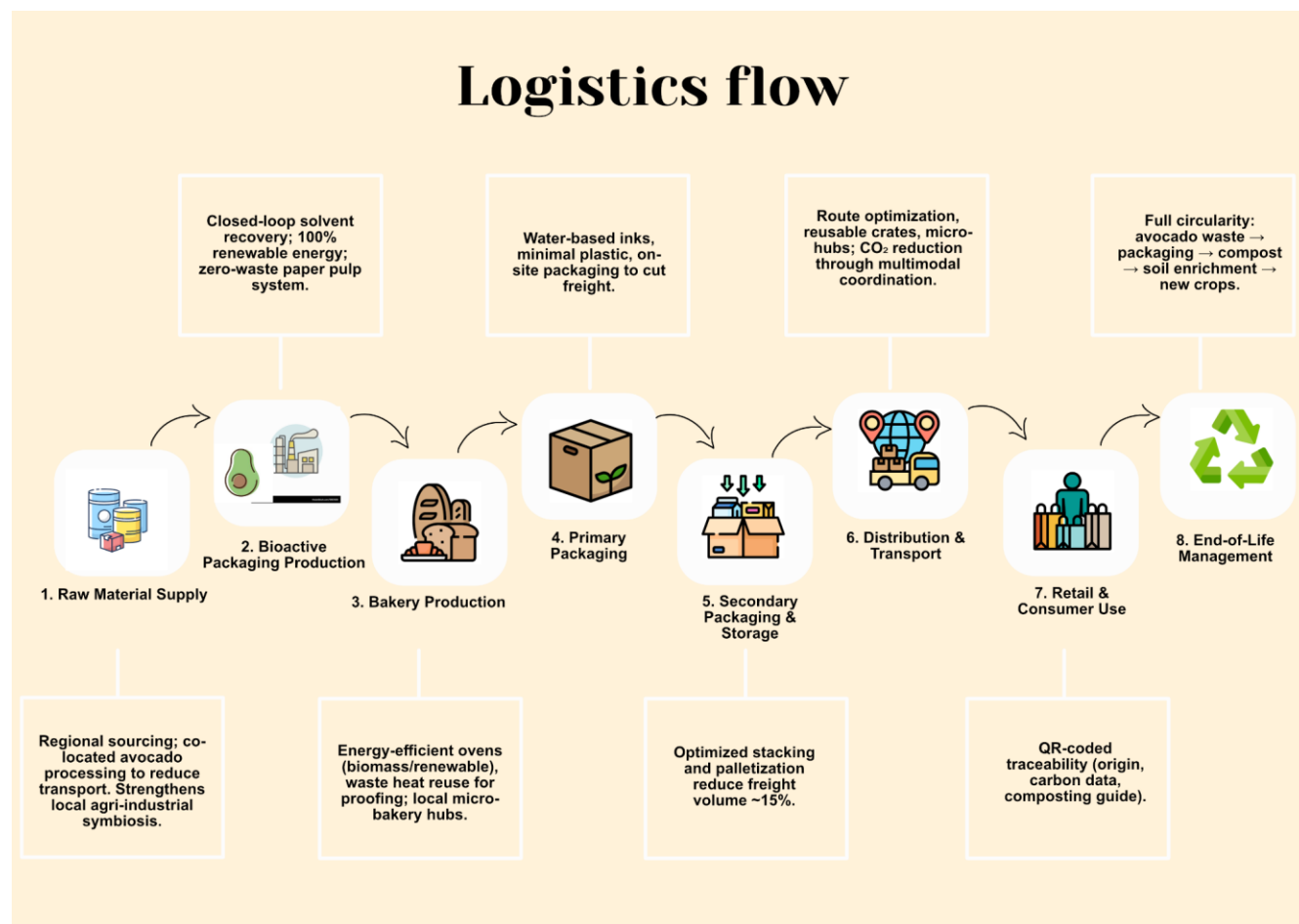
**Fig. 8.** Direction for reducing carbon footprint and impact on environment through packaging

## Packaging

As shown in Fig. 8, sustainable packaging solutions include compostable film, FSC-certified paper, and water-based inks. Lightweight materials reduce shipping weight, while a “refill or reuse” pilot scheme aims to minimize post-consumer waste.

## Transportation

According to Fig. 9, logistics optimization will focus on shorter supply chains and eco-efficient routing. Collaborating with local distributors and using consolidated shipments lower fuel consumption and carbon emissions. Future plans include the gradual adoption of electric delivery vehicles for urban distribution.



**Fig. 9.** Strategies to reduce carbon footprint through logistic flow

## Future outlook

A full carbon-footprint audit will be conducted to identify additional savings, while digital traceability (via QR codes) will inform consumers about sourcing, packaging, and transport emissions. Collectively, these strategies demonstrate a commitment to a low-carbon, waste-minimized production cycle and reinforce the products' alignment with modern sustainable food systems.

## XIII. Digital and technological integration (max. 250 words)

To support marketing, transparency, and consumer education, a dedicated website — <https://sites.google.com/uft-plovdiv.bg/gluten-freedelights/home?authuser=3> — was created as an interactive platform showcasing the gluten-free *Kozunak* and functional crackers (Fig. 10). The website enhances digital presence, allowing consumers, educators, and stakeholders to explore the project in detail.

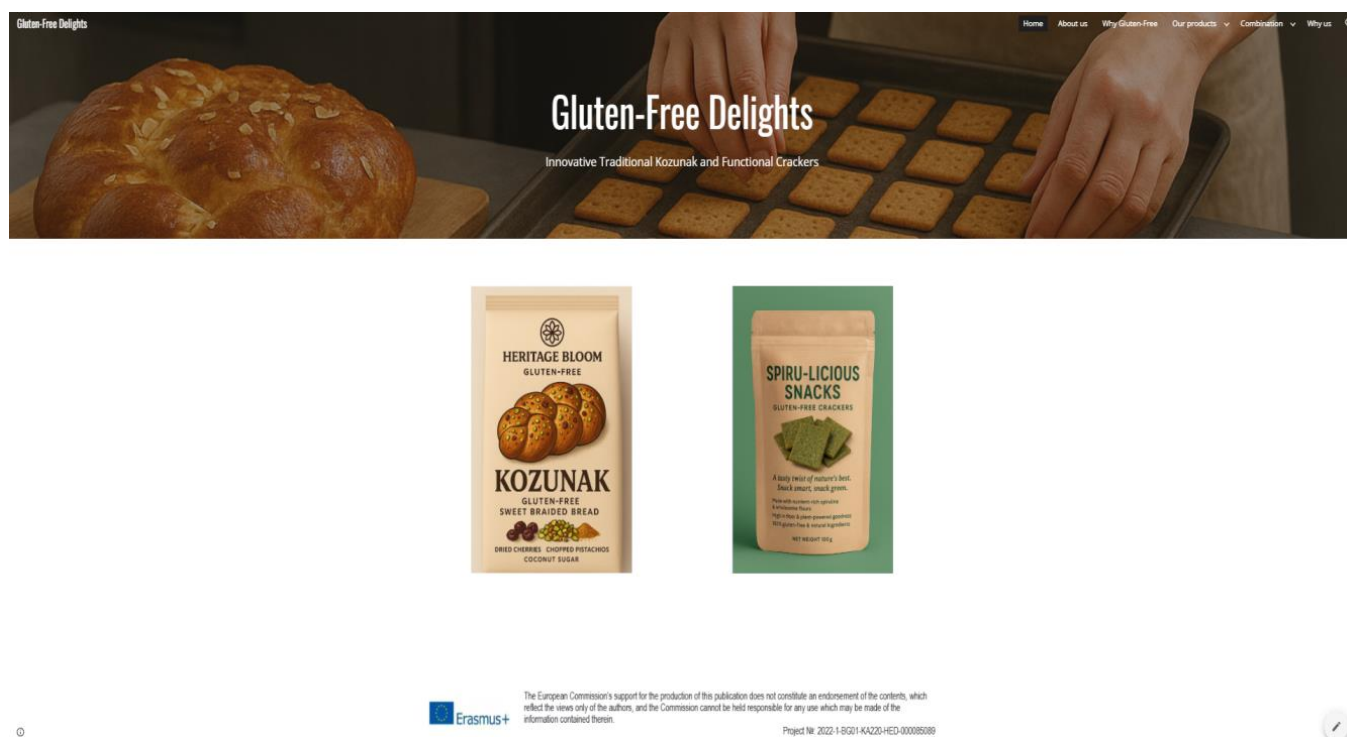


Fig. 10. Homepage of the Gluten-free delight webpage

The platform currently contains **six main sections**:

- **Home:** Displays product photos, packaging visuals, and interactive links directing visitors to detailed descriptions.
- **About Us:** Introduces the student team, mentors, and project objectives, emphasizing collaboration and innovation.
- **Why Gluten-Free:** Educates users on gluten intolerance, celiac disease, and the motivation behind developing safe, nutritious alternatives.
- **Our Products:** Presents nutritional values, ingredient lists, and sensory profiles for both products.
- **Combinations:** Offers creative serving ideas and a feedback form, encouraging consumer interaction and co-creation.
- **Information:** Focuses on sustainability aspects—ingredients, production, packaging, and transport—aligning with responsible consumption principles.

The website serves as a digital learning and communication tool, linking scientific development with consumer awareness. Future updates will introduce new flavor variants, educational materials, and interactive sustainability graphics explaining the carbon footprint and ingredient lifecycle.

Planned collaborations with influencers, healthcare institutions, and kindergartens aim to increase visibility and trust. Educational content and downloadable resources will be accessible directly from the “Information” and “Why Gluten-Free” pages. Ultimately, the platform integrates digital marketing, transparency, and sustainability thinking—transforming *Gluten-Free Delights* into both a product showcase and an educational hub for healthier, more responsible food choices.

### XIII. Consumer communication plan (max. 250 words)

The communication strategy focuses on presenting the gluten-free Kozunak and crackers as authentic, health-focused, and sustainable products that connect traditional craftsmanship with modern consumer values. The plan combines digital engagement, educational transparency, and interactive participation to build long-term trust and brand loyalty (Fig. 11).

#### 1. Health and Wellness

Health benefits, gluten-free, low-fat, high-fiber, and antioxidant-rich—will be communicated visually through clean packaging, icons, and concise nutritional claims. Infographics and expert-backed content on the website and social media will explain the role of functional ingredients such as turmeric, flaxseed, and spirulina. Collaborations with nutritionists and wellness influencers will enhance credibility among health-conscious audiences.





**Fig. 11.** Consumer communication plan

## 2. Cultural Heritage and Sustainability

Marketing visuals will celebrate traditional recipes reimagined for modern needs, using warm, natural aesthetics and storytelling rooted in authenticity. Sustainability messages will emphasize eco-friendly packaging, ethical sourcing, and reduced waste production.

## 3. Interactive Consumer Engagement

The website will feature an interactive learning platform, accessible via QR codes printed on packaging, where consumers can explore topics like gluten intolerance, sustainable food systems, and ingredient sourcing. Users can answer quiz-style questions to earn “Green Points”, which can be used to support sustainability campaigns or community food initiatives. This gamified system promotes education, transparency, and social responsibility while strengthening consumer connection to the brand.

Together, these strategies build an image of trust, health, and purpose, positioning the products as both nutritionally beneficial and socially responsible choices.

## **XIV. Conclusion:**

This case study demonstrates the strong potential of the gluten-free Kozunak and functional gluten-free crackers to meet rising demand for nutritious, high-quality gluten-free baked goods. The Kozunak successfully replicates traditional texture and flavor using a unique blend of gluten-free flours and natural binders, while the crackers incorporate ingredients like brown rice flour, flaxseed, spirulina, and turmeric to enhance nutrition and health benefits. Market analysis confirms a receptive audience among individuals with gluten sensitivities and health-conscious consumers, especially urban young adults. Financial forecasts indicate profitability with break-even projected within 5–7 months.. For successful launch and growth, rigorous sensory testing and consumer feedback are essential for continuous product improvement. Building a strong brand identity that highlights natural ingredients and health benefits is critical, alongside a phased market expansion strategy starting with specialty and online channels before mainstream retail. Strategic marketing and clean-label positioning will further secure competitive advantage in the expanding gluten-free health food sector.

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#### Case study

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