TOPIC: PRODUCT INNOVATION

BREWING FOR THE BODY AND MIND: USING FUNCTIONAL INGREDIENTS IN BEER AND BEVERAGE PRODUCTION

11 min read

The global functional beverage market continues to expand, yet the brewing sector has only begun to scratch the surface of its potential. In this article, we highlight where the opportunities lie for brewers and drinks manufacturers and examine the technical strategies that can help producers tap into this burgeoning category, integrating functionality into everything from craft lagers to non-alcoholic spirits.

Earlier in 2025, specialty roaster Onyx Coffee Lab launched a coffee experience designed to treat caffeine like a precision-engineered drug. Aptly dubbed *Circadian* — a reference to the eating philosophy that aligns consumption with the body's internal clock to support metabolic health — Onyx's new coffee line features five distinct caffeine levels, allowing consumers to titrate their intake throughout the day in line with the body's natural sleep–wake cycle.

The launch aligns with the ongoing consumer demand for foods and beverages that do more than simply satisfy hunger and thirst. Consumers are increasingly seeking **products that offer an experience or provide benefits** such as immune support, mental clarity, stress relief, and overall wellbeing. This **heightened focus on health, wellness, and experiential consumption** has fuelled rapid growth in the global market for foods and beverages made using "functional" ingredients. Valued at ~$400 billion in 2025, the global functional food and beverage market is indeed projected to double and reach ~$800 billion by 2032, growing at a CAGR of +10%.[1]

Unlike conventional ingredients, functional additives are not primarily valued for their flavor, aroma, or texture (though these can sometimes add to their appeal) but for their **bioactive properties** and the specific benefits they offer to the body. Effects can range from helping manage stress and supporting immune function to aiding metabolism and enhancing cognitive performance and concentration. Social media trends demonstrate the real extent of the appeal of functional categories such as sports drinks, fortified snacks, and plant-based beverages. According to recent reports, "green juices for gut health" have risen by +300%, "anti-inflammatory drinks" by +200% in Q1 of 2025, and "superfood smoothies" by 100%. Such is the pent-up demand for functional ingredients that entirely new applications are emerging: searches for "skincare drinks" were up 176% in the same period, while "natural drinks for glowing skin" have increased by 148%.[2]

As functional ingredients have now permeated almost every consumer category, there is ample space for the alcohol sector to play a role as well. Functionality represents a significant opportunity for the industry, especially for traditional alcohol beverages that are facing declining consumption. **Functional beer**, in particular, offers brewers an avenue to maintain and potentially grow market share by appealing to drinkers who might not otherwise choose beer. These ingredients present a compelling opportunity for the spirits sector, as well, where drinkers tend to be more receptive to innovation and less cautious about unconventional ingredients.

A WIDE ARRAY OF CHOICES

In principle, any ingredient that can be described as having one or more specific functions, or that contains a component with a functional effect, can fall into the functional category. As a result, **this space encompasses a remarkably wide and diverse array of ingredients**. They include:

- adaptogens (plant-based compounds such as ashwagandha and rhodiola)
- amino acids and nootropics (including L-theanine, taurine, and bacopa)
- probiotics, prebiotics, and fibre
- vitamins and minerals
- omega-3 fatty acids

Beyond these, the functional toolkit also encompasses **medicinal mushrooms** such as reishi, chaga, and lion's mane, as well as **nutrient-rich botanicals**: herbs, fruits, nuts, seeds, and **grains** valued for their antioxidants, polyphenols, and other beneficial compounds. This group also overlaps with the expanding realm of **superfoods**, including maqui berry, açaí, and baobab fruits, alongside botanicals long employed in traditional medicinal systems around the world. And as new interpretations of existing research emerge and novel compounds are identified in foods, **the list of functional ingredients continues to expand**. Algae and seaweeds, for example, are among the most intriguing frontiers for discovering new ones.[3] Even solid by-products from the brewing process are now being explored as sources of functional compounds, including proteins, polyphenols, and polysaccharides.[4]

Single compounds can be used on their own or combined into formulations designed to deliver specific benefits to the drinker. Sentia, for example, is a range of non-alcoholic drinks in which each expression is formulated to support a particular mood. According to co-founder David Orren, the functional blend of Red is intended to encourage an intimate, relaxed, and receptive state; Black is geared towards being active, curious, and intellectually engaged; while Gold is designed to evoke a joyous, social, and networking-friendly mood. “All the products are GABA-active,” says Orren in relation to **gamma-aminobutyric acid**, an inhibitory neurotransmitter produced in the body through the decarboxylation of the excitatory neurotransmitter, glutamate. “GABA helps regulate fear and resistance, promoting relaxation and openness to social interaction,” he explains. “It’s fundamental to humans as a social species, and we create specific formulations to optimize GABA activity. This stimulation encourages the brain to release its own reward chemicals — dopamine, serotonin, and oxytocin — offering a natural, alcohol-free boost for positive social experiences.”

PRACTICAL CONSIDERATIONS

Whether used individually or in combination, **functional compounds can take many forms**, from powders and extracts to concentrates and whole ingredients. In beverages, they can be simply added, steeped like tea, fermented, or infused, depending on the product format and the intended effect. Ingredient manufacturer Bevie Partners, for example, provides functional ingredients as dry, soluble powders, blended from over 60 selected raw materials, with formulations that can be customized for brewers, distillers, or other beverage producers. “We provide people with individual ingredients so they can create their own recipes,” says Bevie Partners Managing Director David Ditcham. “But we can also supply a fully developed drink, such as hydration or energy beverages… In general, it really depends on the brewery’s equipment — whether they have a dealcoholization skid or are using non-alcohol-producing yeast, for instance — and what the producer wants to achieve.”

The **timing of ingredient integration** is another key factor when working with functional compounds, whether added at the start, during fermentation, or just before bottling. Each approach influences not only the preservation of their functional properties but also how well they blend into the liquid and affect the overall flavor balance. A study published in the journal *Plants*, for example, highlights that botanicals can enhance both the appeal and functional benefits of craft beer. Yet it also emphasizes the importance of determining the optimal stage in the process to add each botanical in order to protect its bioactive compounds.[5]

“Ingredients are often added on the hot side, but the correct point of addition really depends on the brewery’s pasteurization process and equipment,” says Ditcham. “Alcohol-removal steps can denature certain functional materials, so we work with brewers to decide whether it’s better to add these ingredients on the cold side, after alcohol has been removed… But if producers use a soluble product, it could be as simple as a rehydration step in a taproom.”

A MATTER OF TASTE

Functional ingredients are generally sought for their intrinsic benefits rather than their contribution to taste, so brewers and drinks manufacturers tend to favor **neutral raw material with minimal impact on the flavor** of the finished product. As a result, suppliers such as Bevie aim to offer products that are as tasteless as possible, allowing drinks makers to build whatever profile they choose on top. “But we can also supply flavored versions if a brewer wants,” says Ditcham. He adds, however, that **some functional ingredients do have inherent taste**, yet these can be balanced with other components or complemented with added flavors to achieve the desired character.

Brewers can also take a more hands-on approach to shaping flavor by **using fruit juices, pulps, concentrates**, and natural or synthetic aromas to balance the finished drink. Fruited beers are already well established and widely accepted by consumers, particularly among drinkers gravitating toward low- and no-alcohol styles, where fruit character can add both depth and appeal. UK-based beer brand Prime Time, for instance, recently launched a 4% ABV low calorie pear lager. “Our whole brand is built around brewing better-for-you beers that don’t compromise on flavor, and we have a range of beers with functional benefits, all low calorie, low carb and gluten free,” says Harriet Willis, Marketing and Social Media Executive at Prime Time. In this new release, the fruit element — “hand-picked Nashi pears grown on a British family fruit farm” — is positioned as a central part of the appeal to complement its functional credentials. The brand claims the beer is also rich in vitamin C and polyphenols: fruit character and function are on equal footing here.

The beer is made using the brand’s base lager, with fresh Nashi (Asian) pears prepared as a juice, pasteurized, and added during secondary fermentation. “This method retains volatile aromatics and avoids excessive re-fermentation of pear sugars, resulting in a balanced, dry finish with subtle fruit character,” Willis continues. “The addition of small quantities of a natural pear flavoring ensures a consistent pear aroma and flavor intensity, regardless of seasonal variation in the fresh fruit. The flavor accentuates the aromatics gained from the real juice without introducing additional fermentable sugars. These flavoring compounds are added at the final stage in the conditioning tanks, where the ‘dosage’ can be precisely controlled.”

THE ABV DILEMMA

Functional ingredients are a natural fit for no- and low-alcohol products, not only because they appeal to consumers with healthier lifestyle habits, but also because they allow brewers and drinks manufacturers to **replicate the effects of alcohol** for those who want a buzz without its negative ramifications. Smiling Woolf, for example, has recently launched Impossibrew Social Blend, a non-alcoholic beer formulated with ingredients such as L-Theanine, 5-HTP from Griffonia seed, and Vitamin B1, alongside other nootropics. These raw materials are designed to replicate alcohol’s relaxing, mood-enhancing, and stress-relieving effects, but without its typical downsides. Functional ingredients can be used to replicate the effects of alcohol in non-alcoholic spirit alternatives, too. Products such as Kava, Three Spirits, BonBuz, AplosEase, and Kin Euphorics incorporate nootropics, botanicals, and vitamins, promising relaxation or a sense of social uplift, all without the hangover.

Yet **functional drinks don’t necessarily have to forgo alcohol to be successful**. Prime Time’s range of functional beers, which includes a caffeine-infused lager, targets the still relatively underexplored audience of moderate drinkers — those who enjoy full-strength alcohol in moderation while seeking beverages that offer some beneficial or pleasant effect on their body or mind. The key to capture this audience is ensuring that, beyond alcohol content, the liquid itself ticks as many health-conscious boxes as possible. Prime Time Pear, which comes in at 4% abv, is gluten-free, vegan-friendly, and contains 95 calories and 1.7 g of sugar per can, which the brand claims are 24% fewer calories and 83% less sugar than other 4% abv fruit beers. “Usually, the audience for these products consists of people seeking options that are less harmful to them,” says Ditcham. “As a result, many of our clients specifically look to tick multiple boxes, such as vegan, gluten-free, natural, and clean-label ingredients, all of which align with that lifestyle.”

With such a vast array of raw materials available, the initial approach to developing functional beers and drinks can feel daunting, but stimulating too, as it offers producers ample **freedom** to express their vision and create products that reflect their identity. Certainly, the breadth and complexity of the category demand **careful attention to regulatory compliance** across both domestic and export markets. Producers must also ensure that novel functional products are **safe for consumers** — particularly when exploring previously untested ingredients or combinations, especially in conjunction with alcohol — and that any health or benefit claims are factually robust. Yet, navigating these challenges is a worthwhile price to pay for entry into an undeniably vibrant, fast-growing and exciting market.

Michael Gonzales, Senior Advisor, Technical Services at First Key Consulting states, “as a consumer, it’s critical to review the ingredients labels and even dig a bit deeper on the material qualities. For example, heavy metals contamination is a well-documented concern especially with soil and water uptake affecting botanicals like tumeric, ashwagandha, and mushrooms, not to mention equipment leeching and packaging leeching. As a producer, ensuring raw material quality and minimizing processing to maintain the ingredient(s)’ full functionality and benefit to the consumer could help differentiate from fellow competitors.”

“The age of Biohacking is upon us, ironically simultaneous to the rise of artificial intelligence. Within Mother Nature exists a world of possibilities in the functional space, and it’s quite encouraging to see the push towards a happier and healthier version of ourselves.”

By Dr. Jacopo Mazzeo

---

[1] https://www.fortunebusinessinsights.com/functional-foods-market-102269

[2] https://newsroom.pinterest.com/en-ca/news/the-2025-pinterest-summer-trend-report/

[3] https://www.sciencedirect.com/science/article/abs/pii/S0308814622027728 ; https://books.google.co.uk/books?hl=en&lr=&id=6PyPDwAAQBAJ&oi=fnd&pg=PA137&dq=functional+ingredients+beer&ots=WWy75DTPbw&sig=8ZcCno-jJcnwxrY_TNi2LRG4UJc&redir_esc=y#v=onepage&q=functional%20ingredients%20beer&f=false

[4] https://www.sciencedirect.com/science/article/pii/S0889157524004873 ; https://www.mdpi.com/2304-8158/13/5/725

[5] https://www.mdpi.com/2223-7747/11/15/1958