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THE
Clean-Label
Beverage
ISSUE



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MARCH 2015

THE CLEAN-LABEL BEVERAGE ISSUE



04

Market Watch: The Clean-Label Movement

Clean-label beverages should be developed with consumers' expectations for taste, texture, color and stability in mind.



06

The New Drinking Culture: Getting Your Beverages Clean-Label Ready

A look at the top-three considerations when formulating clean-label beverages—sweeteners, flavors and colors.



11

The Last Bite

Food product designers are paying attention to the trends and taking advantage of strategies and information to produce clean-label beverages consumers are seeking.

→ foodproductdesign.com



Market Watch: The Clean-Label Movement

By Judie Bizzozero | *Senior Editor*

The global beverage market is a highly competitive sector flooded with innovative products projected to garner sales of \$1.3 trillion by 2017, according to recent statistics from Companiesandmarkets.com, London. Continued product demand has helped the beverage industry withstand periods of global economic recession, which bears testimony to its unyielding growth.

However, key to beverage sector growth is customer loyalty, which means beverage companies are tasked with creating quality products that not only taste good, but cater to consumers' lifestyle changes and health concerns.

Consumers also are demanding more transparency from food and beverage manufacturers about how ingredients are sourced and how products are manufactured.

Shifting consumer demands have led to immense innovation in the beverages category with the current trends tilting toward an emphasis on health and wellness, and a desire for beverage products formulated with ingredients consumers can pronounce, as well as products with shortened ingredient lists.

According to the 2014 Food & Healthy survey from the International Food Information Council (IFIC) Foundation, Washington, D.C., more than 90 percent of Americans think about the healthfulness of the food and beverages they consume, and when it comes to beverages, consumers are replacing the customary options with ones they believe to be more nutritious or "better-for-you." The survey also revealed consumers are paying attention to other ingredients such as caffeine, preservatives, added sugars, aspartame and high fructose corn syrup (HFCS), which creates more opportunity for manufacturers to swap out less-desirable ingredients for clean-label counterparts.

Consumers also are demanding more transparency from food and beverage

manufacturers about how ingredients are sourced and how products are manufactured.

A Datamonitor Consumer Survey conducted in 2011 found only one-third of consumers trust a statement or claim made by packaged food companies, and more than two-thirds of consumers want to see stricter product labeling.

However, it should be noted that "going clean label" isn't as easy as 1-2-3. While clean label is definitely a buzzword in the consumer goods industry, there is no single definition of clean label, and no regulatory standard for what constitutes a clean product. Currently, the list of unacceptable ingredients used by Whole Foods and similar companies serves as a benchmark for the food and beverage industry.

The "Innovations in Clean Label" report published in 2013 by Datamonitor, London, defines clean label in two ways: 1) the formulation or reformulation of a product to remove artificial additives, flavors, preservatives, and stabilizers, acidity regulators, enhancers, thickeners,

Strategic Issues & Recommendations



Patented ingredients will be more important, particularly emulsifiers. However, the lack of a price premium to the end consumer for clean-label ingredients will be a barrier to R&D activity in terms of return on investment (ROI).



Manufacturers can adopt cleaner, clean or cleanest practices. Ultimately, there are four points of action: the structure of the list itself, the names of the ingredients within the list, the level of processing of those ingredients and how “natural” they are.



The clean-label cycle is an evolving flow between ingredient transparency, consumer education and awareness, and product formulation: throughout this process, manufacturers need to keep the focus on consumer trust.



There is an inherent tension between science and nature in clean labeling. A key challenge in driving transparency is communicating the science of clean labeling effectively without alienating consumers.

Source: Datamonitor Innovations in Clean Label, 2013

This tasks beverage formulators with finding clean-label ingredients that not only look good on a label, but also function well in the final product.

and other ingredients to create a more “natural” product with a simpler list of ingredients that is subject to little or no processing; and 2) the perception by consumers of how natural a product is, based on their reading of the product packaging and ingredients list. Under this definition, clean labeling is about how easy it is for consumers to understand what is in the product they are buying and how it was made.

Whether dairy drinks, coffee, tea, carbonated soft drinks, juices, sports drinks, flavored waters, energy drinks or any other beverage, they must meet consumers’ expectations for taste, texture, color and stability. This tasks beverage formulators with finding clean-label ingredients that not only look good on a label, but also function well in the final product.

However, manufacturers are faced with several challenges when formulating clean-label products—from technical issues around delivering a quality product at the right price to marketing and insight concerns around positioning clean-label products and how to assess shifting consumer perceptions.

The Datamonitor report concluded manufacturers should not lose sight of what clean label means to the consumer: It is a pillar of trust, and consumers want to use clean label to judge product quality or healthiness. As a result, the underlying quality or healthfulness of the product is ultimately more important than removing specific ingredients from a product, and clean label needs to be viewed holistically within the context of the whole marketing message and the whole of the product formulation. ■





The New Drinking Culture:

Getting Your Beverages Clean-Label Ready

By Alissa Marrapodi | *Managing Editor*

With the click of a button, consumers can start a petition, rally the troops and storm the proverbial steps of major food and beverage companies and demand product reformulation. Think of Gatorade and its disdained emulsifier, brominated vegetable oil (BVO); or Starbucks and its “buggy” coloring, cochineal. Food and beverage activists are everywhere—online, in the media and standing next to you in the grocery line. They’re tired of bottlenecked beverage labels with chemical-sounding ingredients, too many ingredients or just the wrong ingredients, according to them.

A new drink segment is emerging—clean label—and this means companies weeding out what consumers perceive as unhealthy or unnatural and replacing them with simpler, “better” ingredients.

But what a daunting task to reformulate a beverage—to not only find a new suitable ingredient, or ingredient system, to replace an old one, but to maintain the same taste, texture, color and price point.

“Standard ingredients are formulated to remove undesirable taste attributes, and stabilize or preserve the ingredient with other materials,” said Bill Smith, director of R&D – beverage, Sensient Flavors, Hoffman Estates, Illinois. “These alterations result in a clear taste profile that typically does not compete with the desired product flavor, but may not meet the criteria of a clean-label ingredient.

Clean-label conscious consumers may prefer sea salt over sodium chloride or spinach extract over a synthetic coloring on their ingredient label, but these changes may bring competing tastes or

visual elements into the product matrix.”

Let’s look a little closer at the top-three considerations in the formulation of clean-label beverages—sweeteners, flavors and colors—as well as the challenges, the solutions and the truth about consumers’ buying habits.

The Sweet Truth

Although there is a lot of hype around high-caloric beverages and the specific inclusion of high-fructose corn syrup (HFCS), consumers seem to talk the talk, but they don’t necessarily walk the walk.

A 2014 study commissioned by the Corn Refiners Association (CRA)—completed in part by Nielsen and Mintel Consulting—compared consumers’ attitudes toward sweetened food and beverage products to their shopping behavior for specific products and brands—all within the context of six distinct and diverse consumer lifestyle segments. The findings from the Sweetener360 study and actual

purchasing data shows consumers don’t necessarily practice what they preach. “While a number of consumers claimed to be avoiding specific sweetening ingredients, their purchasing data shows that is simply not the case,” said Martin Concannon, founding and managing editor of Lafayette Associated, Washington, D.C., adviser to CRA.

In addition, greater motivators in consumers’ decisions to buy sweetened foods and beverages were taste and price, not general health—and-wellness claims. “Whether they were purchasing yogurts, breads, soda or ketchup, no matter which sweetener consumers claimed to avoid, their purchasing behavior remained an integral portion of the sweetened food and beverage market,” Concannon said.

What’s so fitting about the study’s finding is beverage manufacturers name

Greater motivators in consumers’ decisions to buy sweetened foods and beverages were taste and price, not general health—and-wellness claims.

price and taste as, among others, the top challenges when creating clean-label beverages. “HFCS is a very cheap and available sweetener and it’s hard to compete with that on a per serving basis,” said Alison Raban, certified food scientist with BI Nutraceuticals, Long Beach, California.

And it’s not only true when working with sweeteners; Smith said price is also an issue when it comes to clean-label colors and flavors. “Natural ingredients, colors and flavors are often more expensive due to raw material costs and may also require a higher usage level to achieve the same impact as their artificial or synthetic counterparts,” he said.

Further research from the Natural Marketing Institute (NMI), Harleysville, Pennsylvania, found that while more than half of all U.S. adult consumers (58 percent) indicate they “typically watch the sugar content in their diet,” an 18-percent increase since 2005, behavior is still falling short. According to the market research firm’s annual Health & Wellness Trends Database®, fewer than half of consumers (47 percent) indicate they check for sugar “most often” on the label of a packaged food or beverage product.

Some consumers use standard table sugar on a regular basis (42 percent) while others lean toward “natural” sweeteners, with about 42 percent using honey and 21 percent using raw, unprocessed sugar; about 60 percent of consumers prefer foods with no sugars added. But where it gets sticky is only 8 percent state the use HFCS or consume foods or beverages with it as an ingredient on a regular basis, even though HFCS is an extremely common component of many conventional consumer packaged foods and beverages. Hence, there exists a significant lack of knowledge and awareness of this particular sweetener and its widespread applications.

The logistics of switching to a clean-label sweetener in the actual manufacturing stage, especially when reformulating a current product, is a big hurdle, noted Raban. “Most beverage manufacturers have an infrastructure

Since clean label is not clearly defined, this can be left to consumer perception, which can also complicate the formulation.

designed to deal with large amounts of HFCS that can be easy transferred and measured from storage to the mixing vessel and changing to cane sugar can present many challenges—from how to measure large amounts to making sure it is fully dissolved,” she said. “Using agave syrup or honey does have some benefits over cane sugar, but still has some challenges.”

The Sweet Solution

There are a lot of moving parts when creating a clean-label beverage. In terms of sweeteners, each sweetener offers something different to a beverage formulation—both advantages and disadvantages, not to mention different beverages—e.g., carbonated beverages versus energy drinks—require different types of sweeteners. What’s more, “since clean label is not clearly defined, this can be left to consumer perception, which can also complicate the formulation,” said Janae Kuc, research & development manager, Penford Food Ingredients, Centennial, Colorado.

“It seems new beverages have a bit of an advantage since they can start from the beginning with clean-label ingredients and won’t disappoint loyal customers when they reformulate,” Raban noted. “But at the same time, ingredient manufacturers and food scientists are doing excellent work reformulating and overcoming the challenges of using clean-label ingredients.”

Thom King, CEO and president of Steviva Ingredients, Portland, Oregon, said the first challenge is understanding what sweeteners marketing and R&D want to exclude. “Once you understand what the client is willing to accept, working within those confines while being able to deliver a beverage that

has a great flavor profile is challenge two,” he said.

And there it is again: flavor. According to Luis Ferrey, marketing manager for beverages with Ingredion Inc., Westchester, Illinois, “Despite the taste challenges and off notes that occur when formulating with naturally derived, high-potency sweeteners, the product must taste as good as the full-sugar version.”

Ingredion’s DOLCERRA™ sweetness and texture system addresses both sweetness and texture in reduced-sugar and -calorie juices. It allows juice manufacturers to reduce as much as half the sugar content in juices containing up to 25 percent fruit juice with the same taste profile as full-sugar juices.

King said extracts work to mask off-flavors often caused by reduced-sugar profiles. “Recently, we found the greatest success with a combination of monk fruit extract blended with stevia and erythritol,” he said. “We found the extract proportions of stevia to monk fruit can mitigate any off flavors they each impart, and the erythritol creates volume and mouthfeel.”

In addition to its Smoothenol 2G toolbox—all-natural, cost-effective, clean-label masking ingredients that help address a range of



Clean Label

With more attention being paid to food labeling and ingredients around the world, it's now more important than ever to have the right ingredients, formulation and technical support, consumer insights and labeling counsel to develop successful pure and simple or verified non-GMO food and beverage products.

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off-notes—Sensient Flavors also uses extracts to offer a clean-label taste profile. “Sensient Natural Origins products, which use various proprietary extraction processes, bring elements inherent to the named profile including color, flavor and mouthfeel,” Smith said.

But taste isn’t the only issue when reducing sugar or changing sweeteners; texture is often altered as well. Kuc said texture takes into account several different attributes, such as viscosity, suspension, mouthfeel, hydration rate and rheology. She named a few combinations: xanthan gum, citrus fiber and tara gum; xanthan gum and carrageenan; fenugreek gum and konjac; and guar gum and carrageenan. “Each combination will provide different textural attributes and viscosities,” she added.

“Stabilizers allow product developers to target specific textural attributes while providing increased shelf life,” said Dan Grazaitis, senior food scientist, TIC Gums, White Marsh, Maryland. “There is incredible complexity and unlimited potential when combining hydrocolloids, but without a structure by which to measure and communicate the desired texture and functionality, much is left to individual interpretation.” To this end, TIC Gums developed the Texture Revolution® Lexicon, a collection of sensory terms that

provides the necessary common language for developers to assess the textural components of food and beverages.

“Texture attributes can be divided into three groups: those you see (visual), those you touch (mechanical) and those that happen in your mouth (oral),” Grazaitis explained. “Visual attributes include the color and surface appearance of the product both in and out of the packaging such as chroma and sheen. Mechanical attributes describe the experience of manipulation before eating and include fracturability, adhesiveness and resistance to flow. Oral attributes influence the eating experience and the delivery of flavor components (aromatics and basic tastes) with terms such as mixes with saliva, mouth clearing and cohesiveness.”

TIC Gums offers organic and non-GMO options as part of its Ticaloid® Ultrasmooth series—Ticaloid® OG 1155 and Ticaloid® Ultrasmooth NGMO, which are cold water-soluble hydrocolloid systems that decrease astringency and the awareness of particulates in instant beverages.

Flavor and ‘Curb’ Appeal

Flavor, beyond sweetness, presents a unique set of challenges, because flavor agents do more than just add taste to a beverage and they never work alone; they work in teams of flavor agents, emulsifiers, colors (which also impact flavor), and more. So it’s not simply a matter of taste; it’s also a matter of visual appearance and ingredient exclusion.

At SupplySide West 2013, Las Vegas, Kantha Shelke, Ph.D., founder and principal of Corvus Blue, Chicago, discussed the individual challenges that come when reformulating a product to meet consumers’ desires for natural and healthy. “Flavor companies are

looking for substitutes and they are trying to refit formulations,” she said. For example, when a beverage contains orange or citrus flavors, it separates out as an oil on top, so an emulsifier is used to spread the oil throughout the beverage, which creates a cloudy look. And, in the case of Gatorade, Mountain Dew, Fanta, Sunkist and other cloudy beverages, that emulsifier was BVO. Trouble is, as Shelke pointed out, formulators are trying to refit their beverages into that same model instead of offering a different beverage. Moving forward, tell consumers their beverage will have a layer on top and they need to shake their bottle, she suggested. “Consumers can do that. But if you still try to fit your old model, that’s when you run into trouble,” she said.

Grazaitis agreed: “Replacing single ingredients in order to obtain a clean label can be challenging, as the functionality and texture of the new product may not match that of the original.”

So the question is: Are consumers open to change? Kuc said some consumers may be OK with shaking their bottle, while others may not. “They may find it acceptable to shake a beverage before consuming if it contains a ‘cleaner label’ and provides other favorable attributes such as added vitamins and minerals or added protein; however, this is not the case for all consumers. The optimal beverage would be completely suspended with a favorable mouthfeel and clean flavor release,” she said.

In Shelke’s example, consumers’ carbonated drink would become clear. Would consumers be OK with their orange or lemon-lime soda being clear? According to Jody Renner-Nantz, senior application scientist, DDW The Color House, Louisville, Kentucky, “In terms of beverage color, some consumers accept less-than-vibrant colors compared to beverages containing FD&C colors.” DDW has an offering of clean-label colors, including caramelized fruits and vegetables, carotenoids and anthocyanins that enhance a drink’s appearance of beverages, a spirulina powder to replace FD&C blue and a certified-organic caramel color.

Flavor companies are looking for substitutes and they are trying to refit formulations.



Creating clean-label beverages that meet consumers' expectations on taste, texture and price is tough, let alone reformulating an entire line of beverages.

Indeed there is a segment of consumers willing to venture out and try something new so they can drink “cleaner” beverages. This also includes consumers who are willing to pay more for natural colors and flavors. “However, for a larger and more price-sensitive segment of the beverage industry, sometimes it’s not something the consumer is willing to compromise on,” Raban said. “It seems some beverage categories have more flexibility in this matter. For example the fresh-pressed

juice market is already geared to consumers who are very savvy, so when they have separation, particulate fall out or other issues, they understand the challenges and look past them.”

There are new solutions that deal with beverage separation while keeping the label clean—from clear to cloudy beverages. For example, Ingredion has technology and natural emulsifiers that help solve the challenge of separation. “Our offering of Q Naturale, a clean-label emulsifier, can be used to formulate traditional cloudy beverages, like juice drinks and carbonated beverages, as well as more novel beverages like clear fortified and functional waters or energy drinks,” Ferrey said. He explained it can be used at very low levels, 3 percent versus 16 percent for gum Arabic or 12 percent for modified starches, while maintaining a visually appealing and stable beverage. It also enables the removal of weighting agents such as BVO, etc., and other chemical-sounding emulsifiers.

Creating clean-label beverages that meet consumers' expectations on taste, texture and price is tough, let alone reformulating an entire line of beverages. But the industry is working together to create new alternatives and technologies to make clean-label beverage formulation possible.

“Work with reputable and knowledgeable suppliers and leverage their expertise so you can develop or reformulate the best product,” Raban advised. “Make sure to utilize the marketing and sales side of reformulating to tout the benefits of clean label sweeteners to help gain more customers or even offset any issues with a price increase. In the end, beverage manufacturers and developers really have to understand the target consumer and what they expect when using both conventional and clean-label ingredients.” ■

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Formulating Foods explores the latest health and nutrition news and research—as well as the latest ingredient and food application innovations—to determine what consumers want (and need) from the food and beverage products they consume, and how industry can make it happen. Managing Editor Alissa Marrapodi keeps tabs on the pressing issues affecting consumers' health and provides insight to guide food product designers to successful product formulations.

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The Last Bite

Shifting consumer emphasis toward health and wellness has resulted in beverage manufacturers stepping up their game to offer a variety of products that either have been formulated or reformulated with “natural” or healthier ingredients consumers’ desire.



In this Food Product Design digital pulse, “Clean-Label Beverages,” industry experts explore the shift in consumers’ demands for “better” ingredients and how their perceptions are what truly define clean label, while beverage manufacturers discuss the top-three considerations when creating clean-label beverages—sweeteners, flavors and colors—as well as the challenges, the solutions and the truth about consumers’ buying habits.

There is no single definition or regulatory standard that constitutes a clean product; however, the list of unacceptable ingredients used by Whole Foods and similar companies serves as a benchmark for the food and beverage industry. Ultimately, the success of clean label is whether consumers can easily understand the components of the product and how it was made.

Statistics show the majority of Americans today think about the healthfulness of the food and beverages they consume, which creates an opportunity for beverage manufacturers to build a more trustworthy relationship with consumers, as well as increase the quality of their products. But remember, clean-label beverages should be analyzed as a whole, as the overall goal of clean label is to create a product that’s healthy, not just free-from certain ingredients.

The reformulation process is difficult, but despite the many challenges that occur, clean-label beverages have to taste just as good as their traditional counterparts. In fact, taste, as well as price, is the greatest motivator in consumers’ decision to buy sweetened foods and beverages. It is suggested to first recognize what the client is seeking in terms of taste, and then work within those confines to produce a beverage that has a great flavor profile.

However, taste is not the only issue when swapping out sweeteners or altering other ingredients; texture, visual attributes such as color, and oral attributes such as the drinking experience and the delivery of flavor components all contribute to the overall success of the product.

The bottom line is creating clean-label beverages that meet consumers’ expectations on taste, texture and price is challenging, let alone reformulating an entire line of beverages. Therefore, beverage manufacturers and developers need to study their target consumer, and understand what they can expect when using both conventional and clean-label ingredients. Luckily, the industry is working to create new all-natural, cost-effective, clean-label beverage formulation. Food Product Design offers several resources for beverage product developers looking to go clean-label, including: the *“Formulating Better-For-You Beverages,”* *“Survival Guide: Colors”* and *“Survival Guide: Flavors”* Digital Issues. ■

— By Audree Lopez | *Editorial Intern*

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