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- Dairy prices are returning to normal levels as economies recover \_\_\_\_\_ Donna Berry  
Speciality ingredients can lower product cost while maintaining quality \_\_\_\_\_ Rachel Zemser  
Diabetes sufferer numbers are likely to double in the next twenty years \_\_\_\_\_ Thomas Wolever  
Establishing the activities of flavonoids demands substantial research \_\_\_\_\_ Colin Kay

# Cutting Back, Putting In

*Your ingredient suppliers are out there with their own food scientists, chefs and specialised equipment to assist you with your reformulation projects. Their expertise will help cut costs and save money.*

by Rachel Zemser

**T**he pressure cooker is on in the R&D kitchen. Your biggest chain restaurant customer just called and said that if you want to continue making their sauce, sandwich rolls, soups, pumped chicken with painted grill lines, dry seasoning blend and assorted dairy-based desserts you need to reformulate your products, charge less money, keep the label the same, and make sure the customer can't tell the difference! "Lots of challenges lie ahead, because when it comes to food, people care!", says Chef J. Hugh McEvoy, Chicago Research Chefs food industry consultant. "Everyone cares about what they eat, and wants great value, but no one wants 'cheap food'". McEvoy has been involved in many cost reduction projects

and the reality is, "no one has ever delighted a consumer by cheapening a product, which is why it's important to ensure that the changes do not affect the final product quality!" There are speciality ingredients available that can be used to lower product cost while maintaining the original consistent product quality. Your ingredient suppliers are out there with their own food scientists, chefs and specialised equipment waiting to assist you with your reformulation projects. Their expertise will help manufacturers cut costs and save money.

## Unseen Opportunities

Before you begin to reformulate, evaluate and review your current product, process, formulations and ingredients to see if there are any missed

cost-saving opportunities that will only cause minimal changes to the formula or label deck. Dry seasoning blends that have been purchased from an outside vendor can be costly when commodities like sugar, salt, starch, and maltodextrin are blended in by the supplier and then shipped to you. There is a premium being paid to cover the vendors' labour cost, plus additional shipping costs. By removing these commodity fillers and sourcing them locally, you not only will reduce the overall cost of the blend but you will see a significant reduction in shipping quantities. While the cost per kilo of the blend itself may go up, you will, overall, be using less of it.

Shipping charges can be further reduced by buying any liquid products in a more concentrated form. Liquids like fruit juices, tomato puree, and maple syrup can all be shipped concentrated, and the additional water can be added, almost free of charge, in the manufacturing facility. If your product has a 'finished product' ingredient, that is, an ingredient made up of many other ingredients, you can save money by breaking down that ingredient, re-creating your own version of it, and adding it yourself. For example, a hot sauce can be broken down into vinegar, cayenne pepper and garlic powder. The individual

components will be less expensive than buying a pre-mixed version. Are you using kosher or speciality size grain salt in products that are subsequently hot-filled? Unless you need the larger flake or sea salt visuals in your final product, the most cost effective option is to use standard evaporated salt, which measures out the same for your specification sheet and final analytical documentation. What about product packaging? A larger pack size will speed up line time and use less packing materials. You can also request that the ingredients you purchase are sent to you in a larger container, you will pay less for the bulk size pack.

Lastly, take a look at all of your commodity items. Are you shipping your soy oil, citric acid, salt, sugar, and honey from far away locations? Find local commodity suppliers that can warehouse product nearby, and while the commodity price might not change, the shipping cost, especially on high volume items can be dramatically reduced.

## Savings on Seasoning

Whether you are buying a spice or other dry seasoning blends from an outside vendor or making your own in house, there are ways to cut cost while still maintaining final product consistency. Some leaf cut sizes are pricier than others, especially if it is a custom or



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unique size. By switching from a custom cut to a more 'off the shelf' size that is produced in large quantities for several other food manufacturers you can save both yourself and the supplier the cost of a special order or batch that might only be made in a small amount just for you. Subsequently, if your end product is going through a vigorous heating, high pressure manufacturing process then most likely a change in herb or spice cut size will not be noticeable in the finished product. Reducing the quantity of spice blend particulates (herbs, dehydrated garlic, dehydrated onion, and spices) and replacing with standardised extracts and essential oils is also an economical way to reduce ingredient cost. Kalsec, Inc. manufactures naturally sourced extracts and flavours. Kalsec's oleoresin, aquaresins and liquid seasoning products can be used to replace or enhance dry seasonings and dehydrated onion/garlic to achieve cost savings. "Oleoresins and liquid seasonings are plated onto the salt or other carrier of the dry seasoning", says Klaus Zaglmayr at the company. "By doing this, customers reduce

the amount of dry ingredients and achieve significant cost savings as well as improve the quality of their products. Customers who work with sauces or other water dispersible applications use Kalsec aquaresins to achieve similar results", Zaglmayr notes.

Replacing dry ingredients with the right amount of oil extract to match final flavour is tedious and time consuming, but Kalsec has a technical team available to expedite the process. What about the visual

**Cook: "When cost reducing a product that contains juice concentrate, you can remove some of the concentrate and replace with a natural flavour".**



issues that arise from removing particulates from a spice blend? This can be adjusted by adding back some inexpensive dry herbs (such as dehydrated Italian parsley) which provides minimal flavour but can help maintain the speckled visual herb look of the final product. Using caramel colour is also a great way to cut colour costs. "Caramel colour is a great

alternative to FD&C dyes", says Terry Geerts, applications chemist at Sethness Caramel Color. It not only cleans up the label, but costs much less. Geerts also recommends using caramel colour to replace some of the cinnamon in baked good applications. "Cinnamon is expensive", he says, "you can replace some of that cinnamon with caramel colour and cinnamon oil and still maintain the same look and flavour as a more expensive baked product made with just cinnamon".

#### Adding Flavour

Flavours are an excellent way to cut back on ingredient cost while maintaining the original product flavour. "Replacing real honey in a formula with honey flavour, replacing speciality vinegars with a blend of inexpensive white vinegar and balsamic flavour, and making 'olive oil' from soybean oil and olive oil flavour are all great cost saving approaches to reformulation during these tight times", says Mike Serenco, of Ungerer and Company's flavour division. Other expensive commodities like cocoa, coffee, NFDM powder and nuts can all be reduced and subsequently flavour enhanced in applications that use those ingredients. "Unless you specifically need a powdered flavour to incorporate into a dry blend, liquid flavours are more economical", Serenco says. "A powdered flavour has been further processed via spray drying or encapsulation, which adds additional labour cost. Dry flavours are also diluted with gums, maltodextrin and starch, which help

with flow, but reduce flavour potency. Liquid flavours are usually more concentrated with a lower percent usage level to achieve the same flavour intensity", he adds.

#### Off the Shelf

Citrus juice concentrates are not only used to make juice, but are also used as an ingredient in sauces, gravies, glazes, snack food coatings and dry beverage mixes. "When cost reducing a product that contains juice concentrate, you can remove some of the concentrate and replace with a natural flavour", says Sandy Cook, Technochef and developer at Firmenich. He reminds developers "to balance out the reduced brix and acid, by adding extra sweetener and citric acid to the formula".

Exchanging custom flavours with 'off the shelf' flavours can again save both you and your flavour supplier money. They might be currently mass producing a less costly flavour that is similar to your customised version. Sometimes it makes sense to completely eliminate a flavour altogether. For example, an ultra smoky BBQ sauce might have so much smoke flavour already that the 0.001% honey flavour that was put in there by a developer 8 years earlier can probably be eliminated without any detectable flavour differences. A triangle test can help determine if a removed flavour is noticeable or not.

Most flavour laboratories have a full staff of food scientists, flavour chemists and chefs who can assist you with the time consuming task of matching the flavour profile of your product with a flavour. Take advantage of their lab capabilities and utilise their resources as much as possible. That is why they are there, to help you be successful!



**VALUE MATTERS**

**Discover the secrets of cost-effective innovation**

Today's cost conscious culture impacts the whole food and beverage landscape. Consumer satisfaction and the perception of good value are key to the food loyalty. This need for cost optimization puts food manufacturers, marketers, retailers and R&D under immense pressure. The demand for innovations that are cost-effective and on trend has never been greater.

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- Tap into our global cost reduction experience. **MC3...**
- Use resources internally by choosing ingredients that make manufacturing more economical. **MC4...**
- Achieve results by delivering uniform results and optimum quality every time. **MC5...**

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**THE BOTTOM LINE**

Like you, we're committed to keeping costs low. Our business is built on carefully selected ingredients and products, with more cost-effective alternatives, helping you withstand price fluctuations.

Whether replacing expensive features, reformulating or creating healthier, our clients get what they expect and reduce their total cost.

The National Starch Food Institute is a subsidiary of National Starch. [www.nationalstarch.com](http://www.nationalstarch.com)

## Stretching It Out

Starch companies have looked beyond standard thickening capabilities and have come up with a plethora of ways to substitute in starch in lieu of more expensive ingredients. National Starch has a new mini website dedicated exclusively to helping R&D 'discover the secrets of cost effective innovation' (see picture). In confectionery products, like wine gums, jellies and gum drops, National Starch suggests replacing the costly gelatine with starch. The website also recommends using their speciality starch products to replace skim milk powder in chocolate, which maintains the creamy mouth feel perception.

What about fruit fillings with chunky bits of fruit? Fruit bits are costly, by removing some of the fruit and replacing it with a textured starch, the chunky texture can be recreated in an affordable way. Fat mimicking starches can replace up to 75% butter in baked good applications as well as recreate the processing properties of eggs. Starch can even be used as a glaze, and can provide an 'egg wash' glaze on a variety of baked goods. Starch can completely replace gum Arabic in emulsified beverage applications like coffee drinks and smoothies. These 'starch emulsifiers' are not only more cost effective than gum Arabic (which is known for its price fluctuation) but they also save money in manufacturing because they can be used and processed more quickly than gums.

Meat is typically viewed as an expensive meal option but there are starches that can bind up the water, resulting in 'more' meat and improved moisture. In tomato-based sauces, textured starches can be combined with tomato fla-

avour, allowing the developer to use less tomato paste while still maintaining texture, viscosity and flavour. "Starch is a very versatile ingredient", says Agnes Jones, Principal Culinologist at National Starch. "The key is to know what properties you are looking for during your formation development. Once you establish that part; we can assist you to manipulate your formula to achieve the best product possible". Reviewing the starches that you currently buy with your technical sales representative will help ensure that you are getting the maximum

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benefit from your starch based on your formulas process, ingredients, cook time and desired finish.

## Butter Blends

Edible oils, a commodity that is converted into margarine, shorting, salad and cooking oils are used by food processors to create snack foods, cookies, cakes, crackers and ice cream. Butter is a key ingredient, providing both flavour and function in baked good applications. Oil manufacturers recognise this and have created 'butter blends' as a way to save developers money while still maintaining flavour and functionality. "Butter blends are made up of specially processed butter and vegetable oils, and is manufactured primarily for bakers and chefs who need butter and flavour performance, but need to keep their costs down", says Carrie Abrassart, R&D manager at Bunge Oils. By replacing butter with a butter

and vegetable oil blend, butter can still be the first 'fat' ingredient mentioned on the label. "This is important", Abrassart adds, as consumers like to see the word 'butter' on their baked goods ingredient statement, "because it represents quality and authenticity". Furthermore, Abrassart emphasises, "butter's performance is functionally narrower than butter and vegetable oil based solutions. Food scientists use vegetable oil based solutions to expand the functionality of a butter flavoured ingredient, while still delivering butter flavour".



## Going Healthier

Food manufacturers are all jumping on the 'healthy oil' bandwagon these days, trying to replace the vegetable oils in their salad dressings, sauces and baked goods with oils low in saturated fatty acids and high levels of unsaturated fatty acids such as oleic fatty acid. Two such oil types which fit the bill are olive oils and high oleic canola oils. "Olive oil is expensive", says Abrassart, "but there are high oleic canola oils available with similar health benefits, without the olive oil flavour".

Abrassart suggests that manufacturers of infant formulas or hospital foodservice items that do not need 'olive oil' on their label or in their flavour profile, can use high oleic canola oil, which will provide the health benefits at a much lower cost. If however, a company needs to have that olive oil flavour or label for product acceptance, Abrassart then suggests those companies

use a blend of high oleic canola oils in combination with olive oil and/or an olive oil flavour.

## Shelf and Sensory Studies

Once a product has been successfully reformulated, make sure all consumer sensory testing and shelf life studies have been completed before it is released into the market. While new ingredients may seem to function similarly to the ones they replaced, shelf life studies are needed to confirm that there will not be an ingredient breakdown over time.

Viscosity, freeze thaw stability, spreadability, texture, colour and flavour may have unexpected and undesirable changes over time and it is important that these issues are corrected before final product approval. Sometimes in a reformulation, label changes might need to take place. For 'back of the house' foodservice products, this is usually ok, but in retail, customers may express concern at seeing an ingredient statement change, and the Marketing/PR departments need to address this issue as well. When faced with the tedious task of cost reducing a formula with minimal detectable differences, it is crucial to take advantage of your supplier's technical capabilities.

While the food scientists within one company may have a great understanding of functional ingredients, the suppliers will have the top experts along with the most advanced technical equipment for their specific ingredient.

While one might not want to provide their suppliers with proprietary formulations, the more information you can share, the more successful you will be in expediting a reformulated product at a lower price. ♦