

TAURA
NATURAL INGREDIENTS

Taura Fruit Ingredient & Snacking Report 2012

INSIGHT, INNOVATION AND EXPERTISE TO INSPIRE.

URC[®]

Concentrated Goodness

Taura Natural Ingredients is the leading manufacturer and supplier of functional fruit pieces, flakes and pastes for the global market.

Offering customised solutions and manufacturing know-how, Taura Natural Ingredients has been driving new product development and category growth for over thirty years.

At the heart of Taura Natural Ingredients is the unique URC® (Ultra Rapid Concentration) technology. The URC® process concentrates fruit purees to less than 10% moisture in under 60 seconds.

URC® manufacturing facilities are located in Belgium and New Zealand. Customer support offices in the UK and USA, plus a comprehensive selling partner network ensure continuity of supply world-wide.



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Introduction: Fruit is an ingredient whose time is now.

The use of fruit as an ingredient – and in particular 100% fruit – is a major growth trend right now in a range of food categories.

Consumers like fruit as a snack. They also know they should eat fruit and vegetables as part of a healthy diet. However the perceived inconvenience of fresh products including messy preparation, difficulties with transportation, and wastage as they often have to be consumed in one go means this is difficult to achieve in busy modern lives.

As a result, demand for fruit in more convenient formats is steadily increasing. All over the world, shoppers are now looking for fruit-rich snacks, breakfast cereals, baked goods and even confectionery to help them eat more healthily without sacrificing enjoyment.

But at the same time the market is shifting, driven by higher consumer expectations of what fruit ingredients should offer. There is a strong trend away from 'faux fruit', which contains high levels of added sugar – and even colourings and flavourings – to high-solids fruit ingredients that are as close to real fruit as is possible.

To meet this demand, manufacturers need convenient, tasty and natural fruit ingredients that are easy to use in a range of foods. This is where Taura Natural Ingredients can help. We are the 'Experts in Fruit' – leaders in developing a range of fruit-based ingredients and concepts perfect for a host of applications in the snacking, bakery, breakfast cereal and confectionery categories.

Taura is a specialist business with global reach. Our goal is to develop the best possible products for our customers that are natural and simple, have excellent taste and texture, provide great flavour combinations, are shelf stable, and are robust and easy to use in today's manufacturing processes. Our URC® logo is becoming recognised as a mark of innovation and reassurance to product developers worldwide, while food companies see it as a quality mark for high-solids fruit ingredients.

Some of the world's most successful fruit snacking brands rely on our technology and market insights. We are constantly deepening our understanding of the end consumer so we can translate this into developing innovative products for our customers that keep them not only on-trend, but also ahead of the curve.

I hope you enjoy reading the **Taura Fruit Ingredient & Snacking Report 2012**. I'm confident you will find it contains a host of insights and ideas that will inspire you to put Taura's URC® fruit and vegetable ingredient solutions at the heart of your NPD programme!

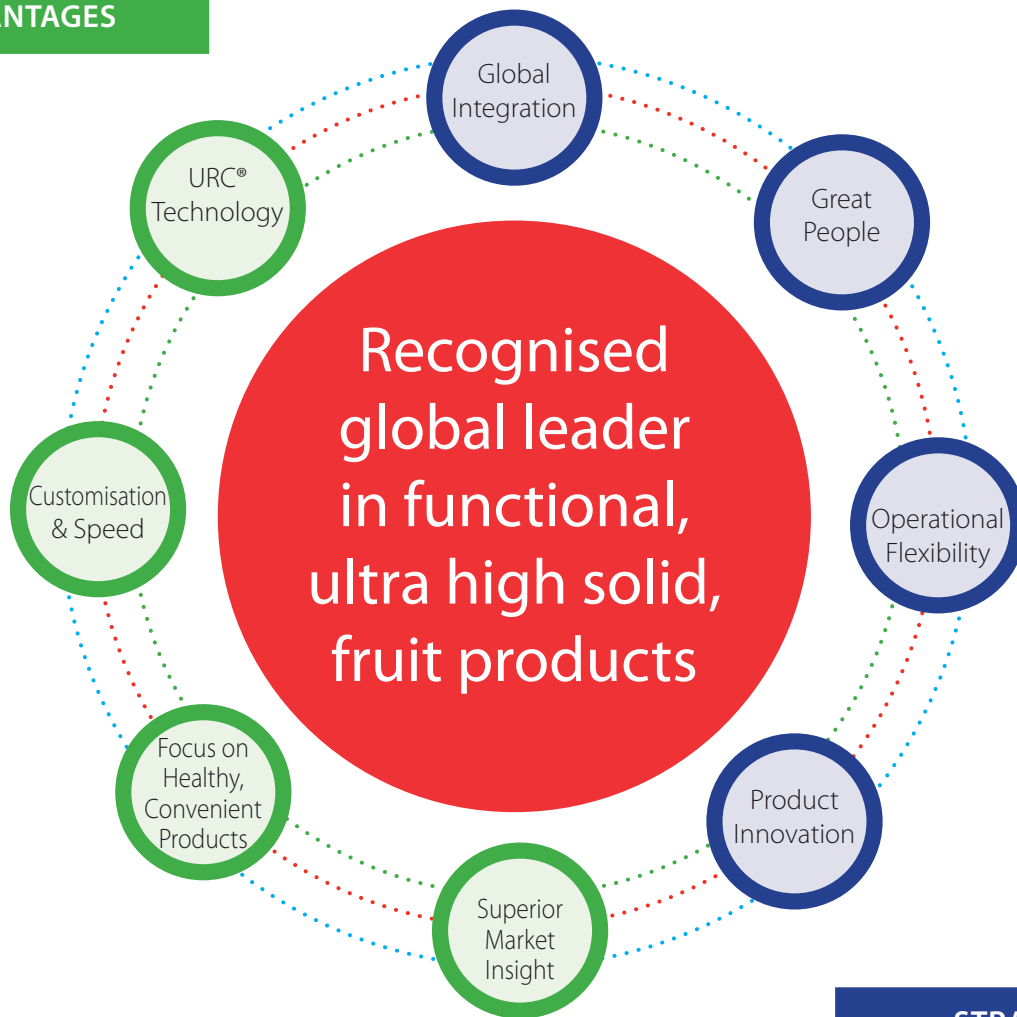


Peter Dehasque
Chief Executive Officer, Taura Natural Ingredients

"Products containing blends of fruit and vegetables are still an embryonic category, but it's one we think is really set to take off."

Taura Natural Ingredients: The pillars of our global leadership in fruit.

COMPETITIVE ADVANTAGES



STRATEGIC PILLARS

Formulating with fruit has never been this easy – or this good for you!

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Nutrition: Pleasure, flavour & natural goodness.



Béatrice de Reynal de Saint Michel has a PhD in Nutrition from Paris Medical University. She is the author of the consumer book Nutrition and is also author of a book for professionals, Innover avec les ingrédients (Editions RIA), which has been re-printed every year since 2002. A Member of the Scientific Committee of the medical magazine Nutritions et Endocrinology, a medical magazine, Beatrice is also Administrator of Fondation Louis Bonduelle, General secretary of Club PAI Food Ingredients (a non-profit making organization, created in 1992) and a contributor to educational programmes at a number of leading French universities.

Nutrition with pleasure and flavour – a nutritionist’s point of view

Nutritional balance and good health depend first and foremost on our daily intake of fruits and vegetables. Yet managing to eat the recommended ‘five-a-day’ portions of fruit and vegetables - equivalent to a minimum of 400g - seems, for many people, like attempting the impossible.

It is no surprise that the European average intake is just 220g of vegetables a day for adults – only slightly more than half what it should be. At the same time there is a significant disparity between the countries of northern Europe (whose daily intake is just 140g) and those of southern Europe (where daily intake is 250g).

As for fruit, it is more abundantly eaten in Germany (190g) than in the United Kingdom (just 95g). Even then, in overall terms, not everyone reaches these averages. Within countries, consumption by some social groups falls significantly short of official recommendations.

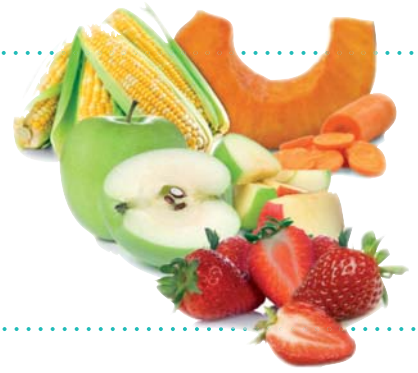
Is price a factor? Yes, but not only that. It’s also a question of education (the more educated people are, the more fruit and vegetables they eat) and psychological factors (fruit and vegetables are much less satisfying than pasta or potatoes).

There are also accessibility factors – it can be hard to find a plate of green beans in a cafeteria or fast-food restaurant. There are prepared dishes, ‘on-the-go’ and ‘ready-to-eat products’, sometimes with a few vegetable options.

The demands of everyday life make almost all of us, to some extent, into ‘nomadic eaters’. The well-intentioned nomadic eater often has no other choice but to carry their own fruit or veggies in their bag or briefcase. And which of us hasn’t, at some point, wrinkled their nose up in distaste at a blackened banana, or a badly bruised apple, left uneaten in the bottom of our bag at the end of a busy day?

Hence the popularity of fruit and vegetable snack products. This emerging category of products undoubtedly owe their immense success to their almost universal accessibility, their often irresistible flavour and their ‘on-the-go’ ease of consumption. However, they are often accused of being too salty, too fatty and too sugary. They can also often contain high levels of added sugars as well as artificial flavours, colours and preservatives – a fact out-of-step in an era in which people want their foods to be as natural as possible.

Including more fruit and vegetables in commercial snack recipes is sensible and becoming easier with technological innovations such as URC® Ultra Rapid Concentration processing.



These advances in science and processing technology are enabling food manufacturers to create products that are simply better for you, without the need for traditional preservatives, additives, sweeteners and stabilizers. Cereal bars with real fruit, vegetable chips, 100% real fruit confectionery, 100% vegetable snacks – thanks to improvements in technology, today anything is possible.

Such healthy snack products give individuals the chance to naturally supplement their fruit and vegetable intake and to meet their 'five-a-day' in a flavourful and pleasant way.

Today 89% of individuals are aware of the link between diet and health¹, more conscious than ever of the importance of dietary choices with respect to their health and well being.

It is imperative that we as manufacturers are able to offer to consumers naturally healthy snacks which are rich in fruits and/or vegetables, are flavourful and in-step with current trends so as to be appealing to all ages.

The future of food lies with innovations that carefully combine pleasure, flavour and nutrition, qualities which, when they are all present, lead to the greatest prize of all: good health. It's worth giving it some thought.

Béatrice de REYNAL

Nutritionist
PhD Nutrition

“The future of food lies with innovations that combine pleasure, flavour and nutrition.”

¹ Source: CCAF 2007 Credoc

Naturality?: A basic consumer requirement.

Today 'natural' is the dominant trend.

In most Western markets the descriptor 'natural' is becoming a basic consumer requirement for the ingredients on the label of any brand, even those without an overt health position. And 'natural' is something defined in the mind of the consumer, not by technical or regulatory definitions.

There are the two broad categories—different, yet entirely complementary—of 'naturalness' as defined by consumer perceptions:

1. Natural meaning 'fewer and simpler ingredients'

Foods that are 'free-from' artificial colours, preservatives or additives. It can also be used to encompass foods that are free from other ingredients that your target consumers object to.

2. Natural meaning 'naturally functional'

Rule number one in the current market: the message that a food or food ingredient has a natural and intrinsic health benefit is one of the most persuasive that people can hear.

Understandably, companies worry about what health claims they can make for their products—and if they can't make a claim, how to get the health benefit message to the consumer. But the good news is they don't always need to. Perceived health benefits from 'naturally healthy' ingredients is an easy concept for both consumers and the media to understand.

As Professor David Hughes, Emeritus Professor of Food Marketing at Imperial College London, observes: *"If you are pushing in the direction people want to go in, it's much easier."*

Oats, almonds, cranberries, blueberries and many other foods have already benefited from this key consumer preference. This trend can only strengthen, thanks to constant positive media attention to foods with natural and intrinsic health benefits.

The best part is 'naturally healthy' needs no health claims. The attraction for industry of the 'naturally functional' trend is that in a restrictive health claims environment, such as now exists in Europe, it makes the marketer's life much easier. In other words, when consumers can draw their own conclusions, no health claim is needed.

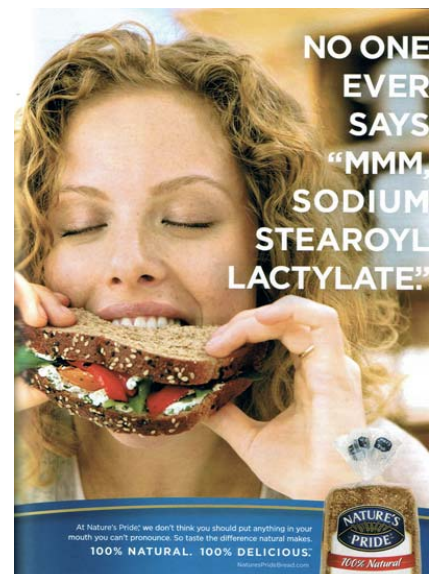
"If you are pushing in the direction people want to go in, it's much easier."



Case Study: Marketing the power of 'naturally functional'.

Coconut Water: European sales of coconut water are rocketing, reaching over €40 million (\$55 million) in 2011, powered by coconut water's natural advantage—that it delivers "all-natural" benefits. Germany-based Dr. Antonio Martins Green Coco, Europe's largest coconut water brand, experienced 90% sales growth over the last year, "without any marketing investment, no advertising," says Dr. Stefan Reiss, CEO. Dr. Reiss and his colleagues have been astonished by the brand's growth. So far it has needed no marketing investment because coconut water's image in the mind of the consumer has been bolstered by a continuous stream of positive press coverage. In America, it's the same story, with sales of coconut water up 100% in 2011 to over \$110 million (€80 million), following 100% growth the year before.

Almonds: Almonds' healthy superfood halo has made them a favourite with the media and with consumers. As a result per capita almond consumption doubled in the US between 1999 and 2008. Responding to the positive image of almonds, in the period 2002-2010, launches of new almond-containing foods grew 158% in the US and 183% in Europe, according to the Mintel GNPD.



THE NATURAL APPEAL OF COCONUT WATER

Beyond taste the health benefit appeal of coconut water to consumers is very simple:

- ✓ a naturally very low calorie content (24cal per 100ml, compared to 48ml for fruit juice)
- ✓ no added ingredients or sweeteners – coconut water is naturally sweet
- ✓ naturally isotonic – containing more potassium and vitamins than formulated sports drinks, it is seen as "nature's sports drink" and often described as such by the media

Coconut water's image in the mind of the consumer is bolstered by a continuous stream of positive press coverage.



Fruit Ingredients: The future of food & health.

The trend towards consumers wanting their foods as natural as possible has benefited fruit more than any other commodity.

Fruit has a wealth of natural advantages:

- inbuilt consumer appeal, offering texture, portability and a wide range of excellent tastes and colours.
- seen by health-conscious consumers as one of the few things they can eat as an indulgence without feeling any guilt.
- has a halo of health, made brighter all the time as a steady stream of news about fruit's natural benefits makes its way into a media eager for simple and positive stories about healthy eating.

Even more excitingly for industry, scientific research into the benefits of fruit is at an early stage. The science of fruit is today where the science of dairy nutrition was 20 years ago.

Researchers are only just beginning to uncover a wealth of benefits in relation to digestive health, immunity, satiety, sports recovery, glucose uptake and insulin response, energy and mood.

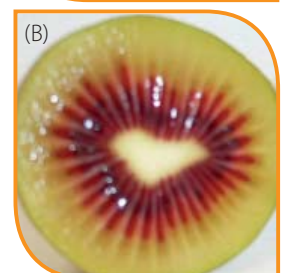
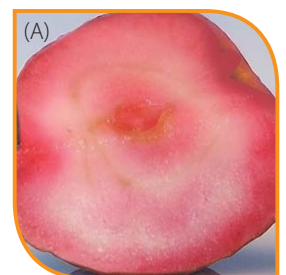
In the future this research will only add to the appeal of fruit – and the main beneficiaries are likely to be the companies who get in on the ground floor and establish their credentials first.

Fruit: the good-looking ingredient

Fruits' sensory qualities – their appearance, aroma, texture and taste – are important determinants of how they are perceived by consumers. At the same time consumers seem willing to experiment with new fruits of all kinds. It's for this reason that plant breeders have begun to commercialise varieties of fruit which have in the past been neglected, to provide strong and very visual appeal. For example:

- As the image shows, apples can have red flesh – this Evesse apple has red flesh all the way through. (A)
- And kiwifruit are not all green – this new-to-the-market variety is gold with a red heart. (B)

Strong sensory qualities are a core focus for Taura's URC® fruit ingredients. And given consumers' desire for new colours, tastes and textures, innovation is core to what the company offers the market.





SOME RULES FOR SUCCESS

1. Focus on delivering the benefits of fruit in the form of beverages or snacks, in as convenient a form as possible.
2. Use packaging innovation to differentiate the product as much as possible in a crowded supermarket.
3. Focus on high-value, low-volume niches targeting loyal consumers. This is the approach taken by all successful superfruit so far. If you can build a beachhead with such a niche you can later grow from it into the mass market.
4. Market a relevant health benefit – the message ‘high in antioxidants’ is so common that it has already ceased to be a point of difference. It is, besides, an ‘ingredient content’ statement not a health benefit, and it is the latter which most motivates consumers.
5. Use technology that delivers authenticity. Select ingredients that enable you to create a product that is ‘clean-label’, has no added sugar and has a high content of fruit solids. It’s essential to meet consumers’ need for products that are authentic, natural and pure fruit.



Julian Mellentin is an internationally respected expert on the business of food and health. He advises companies around the world and publishes New Nutrition Business, the monthly analysis of trends and developments in the industry. With more than 15 years of experience in the field, his opinions on trends in food and health business are sought after – and published each year in the popular report 10 Key Trends in Food, Nutrition and Health.

Julian Mellentin
Director
New Nutrition Business

Health Claims: Leveraging the natural goodness of fruit.

The food ingredients' landscape is in the process of rapid transformation.

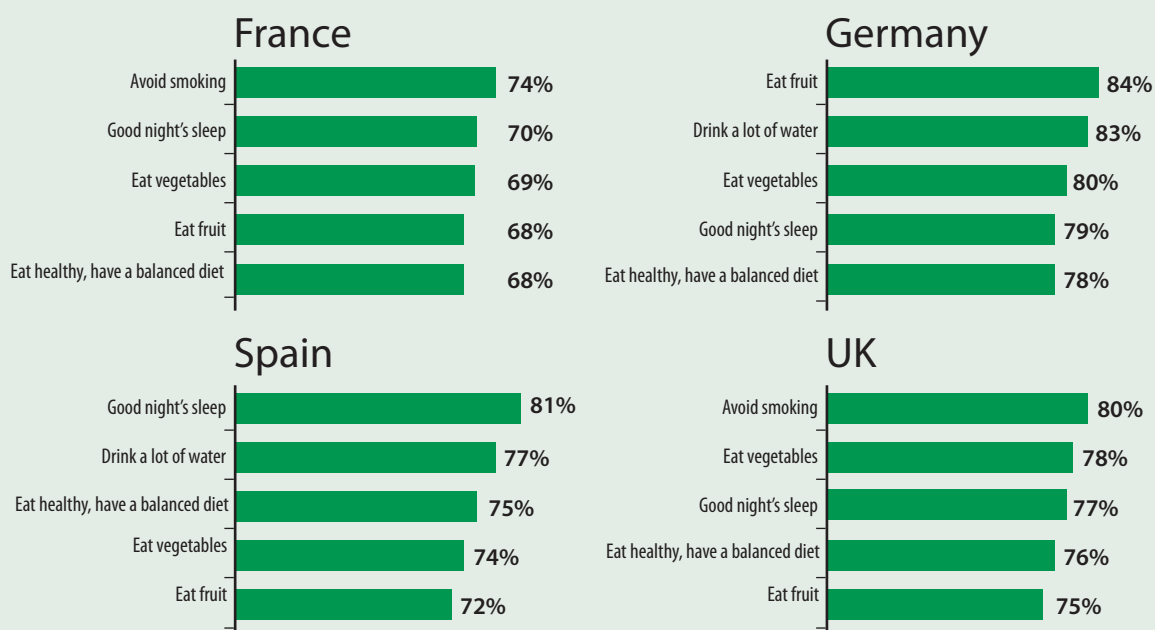
The EU's Health Claims Regulation is about to come into full effect and companies will no longer be permitted to use health claims to promote their products to consumers unless they've been pre-approved by the European Food Safety Authority (EFSA).

This will radically change how healthy and nutritious products can be marketed. So far, EFSA has rejected 80% of the claims submitted for evaluation. Most proposed claims for health benefits from specific foods or their components were rejected after thorough evaluation by EFSA due to lack of proof of association between cause and effect.

At the same time, as a result of the Health Claims Regulation, we also expect ingredients that are already well understood and appreciated by consumers to have a much more important role to play in product development. And at the forefront of this elite group are ingredients derived from fruits and vegetables.

On the whole, European consumers know that fruit and vegetables are beneficial to their health and that they should eat lots of them (even if they don't). According to consumer studies by Ipsos Research, eating fruit and vegetables is in consumers' top-5 list of actions they know they should take for good health. (Refer CHART 1)

CHART 1: Eating fruit and vegetables is in consumers' top-5 list of actions they know they should take for good health



Source: Ipsos Research



Consumer research has shown that – alongside water – fruit and vegetables are the foods that global consumers identify as having the most health benefits. The array of benefits consumers associate with fruit is impressive (Refer TABLE1).

There is also increasing scientific evidence and scholarly recognition that the real value of using fruit and vegetables is in their ‘whole’ form whereby the holistic contribution of protective nutrients and functional components is realized.

Formulating with real fruit ingredients such as the URC® JusFruit™ or URC® High Performance™ range of pieces, flakes and pastes enables manufacturers and marketers to create naturally healthy and delicious products that help consumers achieve their dietary goals.

TABLE 1: Benefits that consumers associate most with fruit.

France

Children grow	60%
Keep you regular	60%
Maintain right weight	59%
Cardiovascular risk	53%
Energy	51%
Immune system	51%
Cholesterol levels	48%
Heart health	46%
Athletic performance	42%
Physical appearance	39%

Germany

Immune system	68%
Maintain the right weight	67%
Children grow	51%
Cardiovascular risk	50%
Energy	50%
Stay young	45%
Heart health	45%
Athletic performance	44%
Mental performance	42%
Keep you regular	41%

Spain

Maintain the right weight	61%
Children grow	56%
Keep you regular	56%
Cholesterol levels	50%
Cardiovascular risk	49%
Immune system	49%
Physical appearance	48%
Heart health	48%
Keep looking good	48%
Signs of skin aging	46%

UK

Maintain right weight	58%
Children grow	56%
Heart health	49%
Keep you regular	48%
Cardiovascular risk	47%
Immune system	46%
Physical appearance	44%
Energy	43%
Cholesterol levels	40%
Keep looking good	38%

US

Children grow	66%
Keep you regular	56%
Heart health	52%
Immune system	51%
Cardiovascular risk	49%
Cholesterol levels	45%
Athletic performance	44%
Physical appearance	44%
Energy	43%
Mental performance	42%

Source: Ipsos Research

Convenient fruit: Consumers' biggest need?

One of the most useful services that the food industry can provide is to help people meet the challenge of including more servings of fruit (and vegetables) in their everyday diet.

Consumers know that eating fruits and vegetables is one of the most important steps they can take to ensure good health. However, knowing what they need to do is one thing, finding a way to translate it into daily action is another.

Convenience is the challenge.

"One of the main reasons consumers don't eat more fruit is that they say they're not convenient. Fresh products are not in the formats that meet people's lifestyle needs. As a result the value that the fresh fruit industry should be capturing is being stolen by consumer goods companies. What form do you think people under 35 will eat fruit and vegetables? More than half – maybe much more – will be in processed formats."

Professor David Hughes, Emeritus Professor of Food Marketing, Imperial College, London

Berries are the exception to this rule – in some markets, fresh berries have shown 20% to 30% per annum growth in sales. The reason is that in addition to their strong health image berries are convenient. These small fruit need no peeling and are easy to eat from the hand.

In the US and the UK berries – naturally healthy, ultra-convenient snackfoods – have achieved the impossible and overtaken the traditional mass-market fruits to become the single most valuable segment of the fruit market. In the UK in 2011 berries account for a mere 5.4% of fruit market volume (measured in tonnes) – but an impressive 18.4% of market value.

And while it's blueberries that have caught the headlines, they are not the main reason for this phenomenal success. Blueberries account for around 20% of the US and UK berry markets.





Healthy premiums

We are told from all sides that consumers are highly price-sensitive, but the success of berries shows that is not true for all categories. Even in a zero-growth economy such as the UK people are willing to pay a super-premium price for berries – in fact the highest price for any fruit and a healthy 90% premium over the next-highest-priced category of fruits.

The reason of course is that what people are willing to pay for any product is not merely a simplistic question of price but a question of perceived value – and a product that delivers value in many ways.

The evidence from Taura's experience of working with some of the most successful fruit snacking brands in Europe is that when fruit is available as a convenient 100% fruit snack, the same dynamics are at work as in the fresh 'snack berry' market, with consumers perceiving convenient fruit as something valuable, for which they are willing to pay a premium price.



Image courtesy of HortResearch

Variety is the spice of life: These tiny berry-like fruits are actually a variation on the classic, hairy, brown kiwifruit. Arguta berries (kiwifruit in a new guise) have acquired the aura of novelty and have proven popular among NZ consumers.

CASE STUDY: CONVENIENT FRUIT – WELL-ESTABLISHED IN BEVERAGES, IT'S A GROWTH OPPORTUNITY FOR MANY OTHER CATEGORIES

Compal Essencial:

successful in Portugal and launched elsewhere in Europe, addresses consumers' need for extreme convenience.

Annual sales €10m in a country of 10m people.

The message is simple – drinking one of its kiwifruit drinks is the same as eating one whole kiwifruit (without the mess or inconvenience).

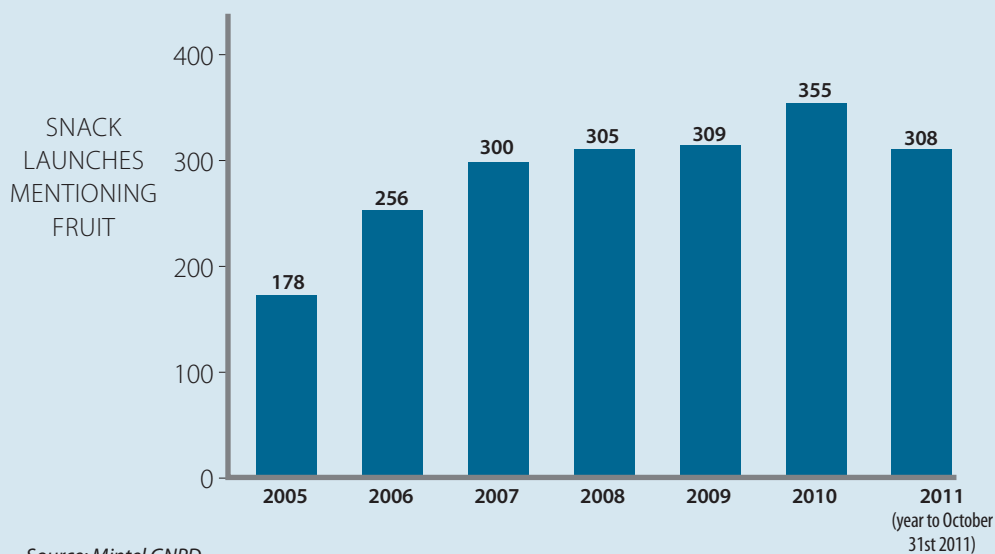


Growth of fruit as a key ingredient

The usage of fruit in snacking products is growing steadily in Europe. However, although many of these products use either pieces of fruit – usually dried cranberry, blueberry, strawberry or apple – very few use ingredients that are 100% fruit. In fact, in many cases, the fruit ingredients used can be as low as 5% actual fruit – many containing high added sugars and most containing artificial preservatives and additives.

Yet consumers – as we have seen – want real fruit, so the European “100% fruit” ingredient market is in growth, up 20% in 2011 so far to a value (in Europe) of around €40-€45 million.

CHART 2: European launches of snack products mentioning fruit in Europe, 2005-2011.



For companies that are looking to differentiate themselves, using 100% fruit ingredients is an opportunity. Ingredients, such as Taura's, that are 100% fruit, enable companies to do what many fruit ingredients cannot do as well, and communicate the most important message for consumers:

- ✓ One serving of fruit
- ✓ Source of dietary fibre
- ✓ Low GI
- ✓ Clean label
- ✓ Naturally occurring sugars
- ✓ No artificial colours, flavours or preservatives

CONVENIENT FRUIT FACTS

- The European 100% fruit ingredient market grew 20% in 2011 to a value of around €40-€45 million.
- The number of product launches in the bakery, confectionery, breakfast cereal and snacks categories which included fruit as an ingredient rose by 50% between 2005 and 2011, according to Mintel GNPD.
- European retail sales of fruit snacks based on 100% fruit ingredients grew 11% to €165 million in 2011 (year to September 30th).
- 'Eating more fruit and vegetables' is in the list of top-5 actions that European consumers know they should take for better health.
- In Europe 80% of consumers know the importance of eating enough fruits and vegetables, but in practice only 20% are actually doing it.
- 'Maintaining the right weight' is the benefit that all Europeans have in their top-5 benefits that they most associate with fruit.
- French and German consumers put 'energy' among their top-5 benefits associated with fruit.

Source: *New Nutrition Business*



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Fruit + Vegetables: A new category & new opportunities.

Great tasting 'fruit and vege' is now a reality.

Following the success of fruit-and-vegetable juices in Japan (where they are now an €800 million market) and, in the US, the rise of Campbell's V8 Fusion fruit and vegetable juice blend, this has led to a surge in the numbers of new beverages that combine fruit with vegetables.

This trend is now making its way into the healthy snacking market, with a steady increase in sales of snack products that combine fruit with vegetables.

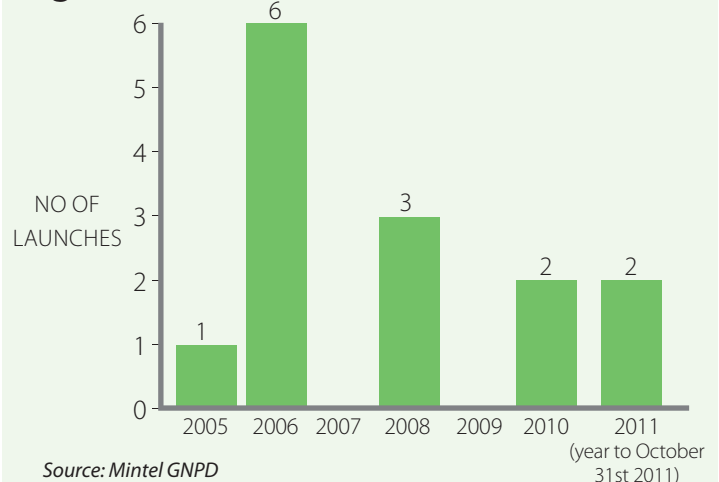
This market is in its embryonic stage – and is likely to grow – as new technological innovations make great tasting, 100% fruit and vegetable snacks a reality.

CHART 3: Launches of vegetable-based snacks, Europe, 2009-2011.



Source: Mintel GNPD

CHART 4: Launches of snack products combining fruit and vegetable ingredients, 2005-2011.



Source: Mintel GNPD

There's a wealth of advantages to combining fruit with vegetables.

- **For parents:** a product including vegetables is a way of smuggling "hidden vegetables" into the diets of children who are often reluctant to knowingly eat vegetables. The "hidden vegetables" trend has become an important one in the kids' food market with brands such as Ella's Kitchen – in the UK and Sweden – growing to success with this strategy.
- **For the weight-conscious:** products that include more vegetables can have the benefit of lowering calorific value.
- **For manufacturers:** in an ever more-crowded and competitive market, incorporating vegetables with fruit helps create a new point of difference, new textures and new benefits for products.

URC® JusFruit™ + Vege

Naturally delicious URC® JUSFRUIT™ + VEGE Pieces, Flakes and Pastes are made using 100% fruit and vegetable derived ingredients.

Rich in natural goodness, this new range from Taura, is the perfect platform to bring your new products to life.

■ **Real Fruit & Vegetables**

Made from purees and juices, just 10g of URC® JUSTFRUIT® + VEGE contributes a half serving of fruit or vegetables to your snack products.

■ **High Fibre, Low GI**

High fibre content and natural sugar mean URC® JUSTFRUIT® + VEGE is both low GI and GL.

■ **Nutrient Rich**

URC® JUSTFRUIT® + VEGE is made from whole fruit purees which are high in natural vitamins and minerals.

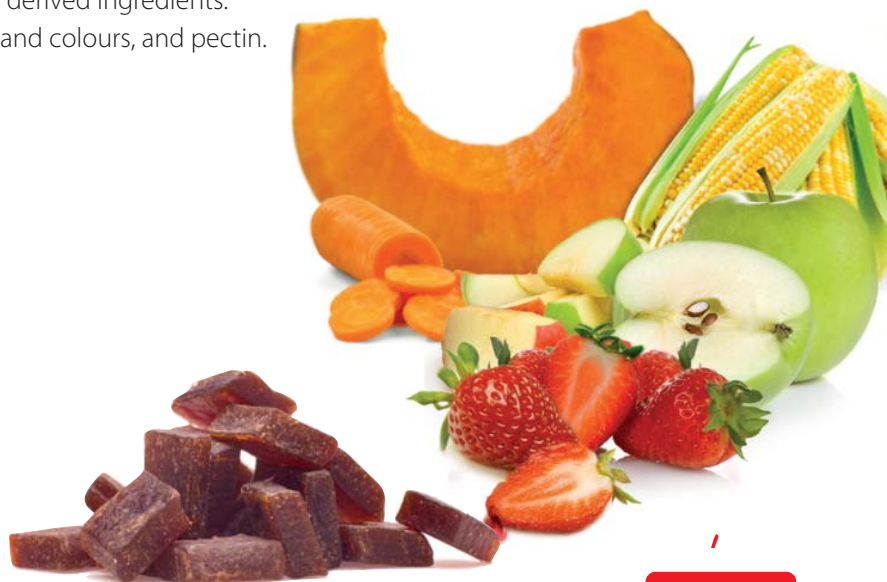
■ **Antioxidants**

Independent laboratory testing confirms ORAC (antioxidant) values of URC® JUSTFRUIT® + VEGE is higher than that of an equal weight of raw blueberries.

■ **Clean Label**

URC® JUSTFRUIT® + VEGE is clean label because it is made from 100% fruit and vegetable derived ingredients: purees, juices, natural flavours and colours, and pectin.

Fruit and vegetables never tasted so good!



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Fruit + Grains: New combinations & new possibilities.

Ancient grains a top ingredient trend

High in energy and nutritional value, ancient grains such as quinoa, amaranth and even chia seeds have become a top ingredient trend and the food industry has responded with an ever-increasing tide of new products, as Chart 6 shows.

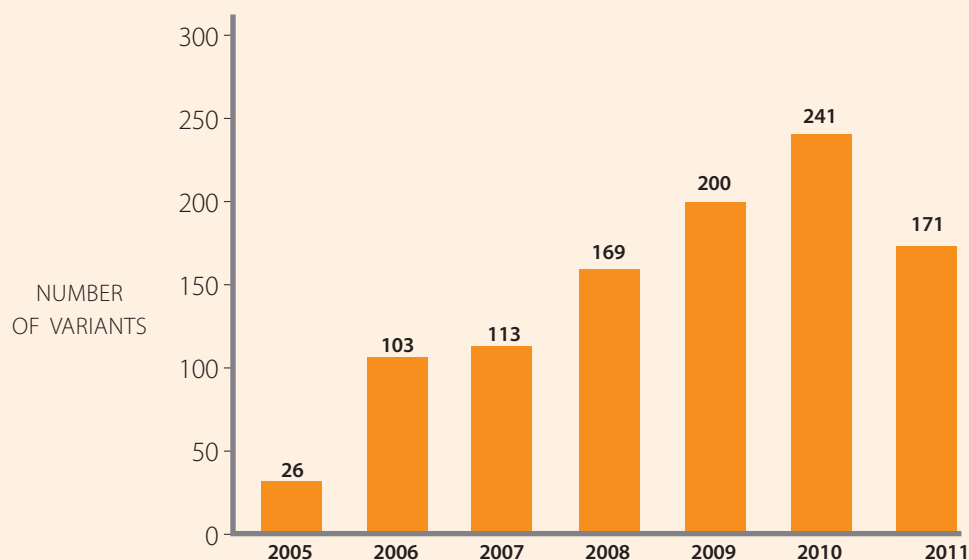
In Europe just 26 products with ancient grains were launched in 2005 – across all categories – but by 2010 the number of launches had increased to 241.

As Chart 5 shows, the surge in product launches has been particularly marked in the European bakery market and the breakfast cereal category.

Consumers' growing interest in ancient grains is a perfect example of the power of the naturality trend in action.

Chia was part of the staple diet of the Aztec and Mayan nations in Mexico. Chia is often referred to as a "superfood" for its nutritious composition—and for good reason. Most notably, chia is recognized as a valuable vegetarian source of essential fatty acids (EFAs). It is a very rich source of omega 3 (ALA-alpha linoleic acid) and omega 6 (LA-linoleic acid). Chia contains 12-20% by weight omega 3 and 3-7% omega 6.

CHART 5: Launches of foods with amaranth, quinoa, chia, ancient grains within Europe, 2005 - 2011



Source: Mintel GNPD

URC® INCLUSIONS™

Taura Natural Ingredients has launched an innovative range of ingredients that combines – for the first time a full range of seeds, grains and cereals – even URC® fruits and vegetables.

The new range, which is called URC® Inclusions™, will allow manufacturers to fill a gap in the market by creating products that contain customized blends of ancient grains such as quinoa, amaranth and chia with 100% pure concentrated fruit and vegetables for applications in the snack, bakery, breakfast cereal and confectionery categories.

■ **Ancient Grains**

High in energy and nutrition, ancient grains such as quinoa, amaranth and even chia seeds are a top international food trend for 2012.

■ **Crispy Crunch**

Crisped rice and cereals add surprising taste and texture, providing natural appeal for young and old.

■ **Functional Ingredients**

Encapsulated nutraceuticals, including probiotics and prebiotics and omega-3 oils provide a range of health promoting benefits.

■ **Fruit & Vegetables**

Sundried and freeze dried fruits and vegetables, including URC® fruit pieces, can be added for flavour, colour and texture variety.

■ **Sweet treats**

Chocolate in the form of cocoa nibs and sweet biscuits create new possibilities for a range of fruit combinations.



Formulating with Fruit: Mitigating moisture transfer.

As manufacturers are getting more adventurous with the types of fruit they incorporate into products, the technical innovation required to keep pace with industry's demands is heating up.

The arguments for adding fruit are compelling: it adds contrasting texture and colour as well as a healthy dimension, which is particularly important given that health and wellness has become a key element in the NPD strategies of leading manufacturers.

But while fruit is a marketer's dream, it can be a product developer's nightmare – which is where Taura Natural Ingredients can help. With over 30 years of experience working with fruit and vegetables, our knowledge and expertise has been focused on understanding the nutritional, structural and sensorial qualities of ready-to-eat fruit and vegetable products with optimal health benefits, while maintaining product safety and functionality.

What is Water Activity & why is it important?

The concept of 'free' water is an important consideration in food product design. The term 'water activity' (Aw) refers to 'unbound' or 'free' water in a product – that is, the water that is not bound by food molecules and is active.

Water activity helps food designers to understand and predict how ingredients such as fruit will behave when added to products and how they can select the appropriate water activity level to prevent undesirable changes from taking place.

Bakery manufacturers face many challenges in trying to incorporate fruit ingredients into their products:

- **Product spoilage:** Fruit ingredients with Aw above 0.65 promote the growth of bacteria and moulds. Designing a product below 0.6 provides effective control.
- **Reduction in product crispness:** Some fruit ingredients are not designed for low water activity applications and as a result moisture from the fruit ingredient is absorbed by the end product and reduces product crispness.
- **Shelf life of fruit ingredient:** Fruit ingredients with lower water activity can minimise other undesirable chemical changes occurring during storage of ingredients.
- **Moisture transfer:** Problems usually arise when ingredients with high water activity are introduced into a low moisture environment e.g. adding dried fruit pieces with an 0.6Aw to a cereal with 0.35Aw results in the cereal becoming stale or soggy and the fruit becoming hard and dry.



Mitigating moisture migration

The key to overcoming moisture migration is to match water activity of the inclusion to the end-product matrix. Broadly speaking dry biscuits, cereals, cookies, toasts and wafers have low water activity levels of 0.3-0.45 and therefore need fruit ingredients with corresponding water activity levels. By contrast baked products such as bread, pastries, cakes and muffins can accommodate fruit with a fairly high water activity of 0.6-0.7 because the baking process will remove surplus water. However, shelf life and product stability is greatly reduced with higher water activity levels due to increased risk of micro-bacterial growth and mould. Generally manufacturers prefer to work with fruit ingredients with water activity levels lower than 0.45 to ensure product safety.

The typical water activity of dried fruit is in the range of 0.5-0.7, rendering many commercially available dried fruit ingredients unsuitable for low moisture applications such as cereal products, snack bars and biscuits. Where dried fruit ingredients do have lower water activity, it is usually as a result of dehydration processes that also result in a loss of true fruit characteristics. Furthermore, with these dehydration methods, flavour, texture and colour are typically chemically stabilised with sugars, salts and humectants.

Low water activity, bake-stable fruit ingredient solution

Recognising that the key lies in controlling the water activity of fruit ingredients, rather than simply removing moisture, Taura Natural Ingredients pioneered its proprietary Ultra Rapid Concentration or URC[®] process technology.

URC[®] reduces total humidity to achieve soft, moist fruit pieces and flakes with lower water activity than can be obtained through traditional techniques. It concentrates blends of fruit- or vegetable-based ingredients to less than 10% moisture in less than 60 seconds. The speed of the process means that taste, colour and texture are retained. This enables manufacturers to incorporate the characteristics of real fruit into extremely low moisture products.

Today all URC[®] products can be formulated to suit a range of baked applications, ensuring maximum performance is achieved. Taura products can be developed to match desired water activity and bake stability, while delivering high fruit content in baked applications.



URC[®] Product Overview

THE Formulations

URC[®] JUSFRUIT[™]

Made from 100% fruit or vegetable derived ingredients, with no added sugar, URC[®] JUSFRUIT[™] is free from artificial colours, flavours and preservatives.

URC[®] HIGH PERFORMANCE[™]

The URC[®] HIGH PERFORMANCE[™] range is formulated to offer superior bake stability, low water activity fruit pieces and pastes for a range of dry and baked applications.

URC[®] INCLUSIONS[™]

Combine the goodness of fruit with grains, seeds, cereals and even other fruits or vegetables, with any of our existing formulation bases. URC[®] INCLUSIONS[™] creates new possibilities for delicious and innovative food concepts.

URC[®] CREATIONS[™]

This non-fruit based formulation range focuses on bake stable, low water activity indulgent flavour innovations such as caramel and honey. The URC[®] CREATIONS[™] range is also dairy free, gluten free and low fat.

All URC[®] Products feature:

- Low water activity
- Bake stability
- Long shelf life
- Flexible formulation design



TAURA

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Concentrated Goodness[™]

URC[®] Product Overview

THE Formats

PIECES



FLAKES



STICKS & STRINGS



PASTES



Customised Ingredient Solutions for:



FRUIT
SNACKS



BREAKFAST
CEREALS



BAKERY



CEREAL
BARS



CONFECTIONERY



CHOCOLATE

TAURA

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The Taura Team: Our Values

As part of our commitment to our customers, we live by a set of principles that embraces everything we do:

- **Safety**

The wellbeing of our staff and the integrity of our products is of utmost importance.

- **Initiative & Continuous Improvement**

Our people are recognised for their independence and empowered decision making; demonstrating initiative and promoting continuous improvement.

- **Integrity**

Our people, our customers and our suppliers are treated as partners in a mutually respectful manner.

- **Professionalism**

Acting in a professional, reputable way is a prerequisite for being part of our team and this is recognised by our customers, suppliers and the community.

- **Cultural Diversity**

We embrace our cultural diversity between and amongst our business units and actively support each other in helping the business win globally.

- **Sustainability**

We operate our business in a sustainable manner.



The Taura Team: People & Contacts

Executive Team



Peter Dehasque
CHIEF EXECUTIVE OFFICER



Richard Croad
CHIEF OPERATIONS OFFICER



Shane Oxenham
CHIEF FINANCIAL OFFICER



Thomas R. Burrows
PRESIDENT - USA



Peter Tinholt
GENERAL MANAGER – ASIA PACIFIC

Sales Team – Europe & UK



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HEAD OF SALES
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EASTERN & SOUTHERN EUROPE



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