

Flavour creativity...naturally

A NEW GENERATION OF DISTILLATES FOR FLAVOUR INNOVATION IN FOOD AND BEVERAGE PRODUCTS, DR JOHN BODDINGTON EXPLAINS

The ever-increasing demand for products in the food and beverage sector today has added pressure on flavourists. The challenge is complex: how do you improve existing formulations, develop exciting line extensions and create distinctive new products which will appeal to consumers?

Health awareness is one of the prime drivers of both the functional and standard food markets. The importance of flavours which meet the expectations of more demanding and health conscious consumers is therefore key. Innovation and distinctiveness need to be combined with consumer appeal and labelling considerations.

Definitions

There are three main definitions of natural flavours that are increasingly used by manufacturers in both Europe and the USA:

From The Named Food (FTNF) flavours consist only of extracts or dis-

tillates taken from that named food. Banana FTNF for example, may consist of banana concentrate and/or banana distillate. It may not contain material from any other source, natural or otherwise.

With Other Natural Flavourings (WONF). These are FTNF flavourings blended with other natural flavourings. For example, banana WONF could consist of banana distillate fortified with other natural flavouring ingredients.

Natural Flavour. These may contain flavour ingredients from any source so long as it is classified natural. They do not have to be from the named source.

In the USA, the presence of non-FTNF natural flavouring and/or artificial flavouring in a finished product must be stated on the label with the name of the food, as well as in the ingredients list - not particularly desirable for food manufacturers looking to appeal to an increasingly health conscious public.

As a leading independent flavour ingredients specialist, Treatt plc has been at the forefront of research and development in the natural flavour ingredient arena. Having recently developed a range of specialty, FTNF, soluble distillates from various fruits, vegetables and crop sources (ranging from passion fruit and cucumber to malt and honey), Treatt is well placed to comment on the use and marketing of these products.

Fresh flavours

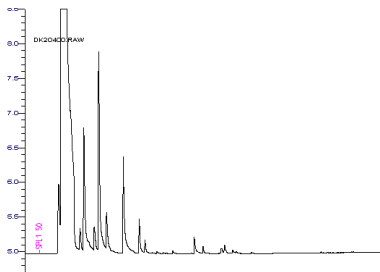
Natural FTNF flavours are ingredients extracted by a physical process – free from chemical reactions – from a named botanical origin. Containing no preservatives or antioxidants – they offer manufacturers the marketing benefits of a clean label declaration such as “extract” or “concentrate”.

However, a clean label declaration is not in itself sufficient. Flavour companies and their customers – food and beverage manufacturers – demand

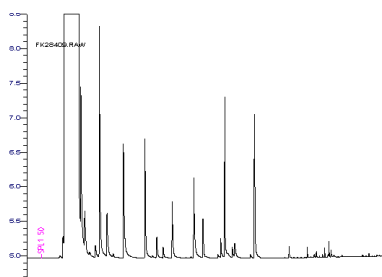
Table 1: Natural distillates deliver powerful benefits

Distillate	Dosage level (%)	Character	Naturally occurring chemicals
Banana Treattarome 9730	0.05	Intense banana – fruity and estery as sole flavouring	isoamyl acetate, butyl acetate, pentan-2-yl acetate, pentan-2-yl butyrate are key components Spicy/smokey nuances from phenolics such as eugenol and elimicin
	0.01 or less	Fresh banana notes	
Guava Treattarome 9740	0.06	Intense guava – fruity and spicy as sole flavouring	hexanol, ethyl butyrate, ethyl hexanoate, cis 3-hexenyl acetate, ethyl phenylacetate, phenylethyl acetate and 3-phenylpropyl acetate. lone also key component Spicy nuances from cinnamyl acetate
	0.02 or less	Tropical guava notes	
Cantaloupe Melon Treattarome 9726	0.05	Intense melon – sulphurous, tropical, fruity and estery	n-aldehydes, nonenols, nonadienols, many esters including sulphur containing esters
	0.02 or less	Fresh melon notes	
Kiwifruit Treattarome 9770	0.06	Intense kiwi character – fresh, green and fruity as sole flavouring	methyl butyrate, ethyl butyrate, hexanal, trans 2-hexenal, hexanol, ethyl hexanoate, methyl benzoate, ethyl benzoate
	0.02 or less	Tropical green/strawberry notes – gooseberry, green tea and grape skin undertones	
Passion fruit Treattarome 9750	0.05	Intense passion fruit – fruity and estery as sole flavouring	ethyl butyrate, ethyl hexanoate, hexyl acetate, hexyl hexanoate and linalool Tropical/sulphurous nuances from various sulphur esters and 2-methyl-4-propyl-1,3-oxathiane
	0.01 or less	Tropical passion fruit notes	
Watermelon Treattarome 9724	0.06	Intense watermelon – over dosing leads to rind notes	n-aldehydes, nonenols, nonadienols etc
	0.02 or less	Fresh melon notes	

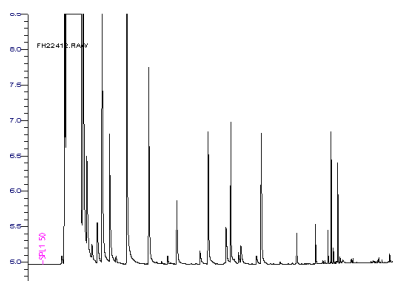
Figure 1: Natural distillates comparison
Product 1: By-product of banana purée manufacture



Product 2: Concentrated banana aroma – produced by conventional means



Product 3: Banana Treattarome™ 9730



ingredients which reflect the character of the original, fresh food and ingredients, which are also the result of a highly concentrated flavour entrapment process. Treatt has addressed this problem by applying an array of specialist technologies, including short duration/low temperature distillation, to develop the Treattarome™ range of natural distillates.

Tropical top notes

Kiwifruit, passion fruit, guava, banana, watermelon and cantaloupe melon are all increasingly popular fruit flavours as consumers widen their search for innovative and different taste experiences.

Delicate, yet unique, flavours such as these are difficult to equal. Natural distillates offer the flavourist an important

resource – especially when developing hard-to-match flavour profiles. Critically, FTNF distillates add exceptional top note character at low dosage levels to existing formulations, where flavourists are looking to either extend or deepen the character of their flavours. They can be used as the sole flavouring to impart an intense, tropical fruity character and can also provide effective notes when combined with each other. The table shows some examples.

Going bananas

Consumers feel that they know how a banana should taste. Indeed, as consumers travel more – and taste fresh bananas in their country of origin – and as the transport and delivery of fresh fruit improves, more and more consumers are becoming aware of how rich, fruity and fleshy a ‘real’ banana can be.

Further trials by Treatt demonstrated the beneficial effect that can be obtained by using natural, from the named food (FTNF) distillates in developing a true banana flavour. In order to provide flavourists with a guide to the use of its natural banana distillate (Banana Treattarome 9730), it was assessed against two other FTNF banana products.

The three products tested were:

- Product 1: By-product of banana purée manufacture
- Product 2: Concentrated banana aroma – produced by conventional means.
- Product 3: Banana Treattarome 9730

Looking at all three products (see Figure 1), the results vary considerably. Product 1 is weak and variable while Product 2 has a generally fruity character but is unbalanced, making it unlike true banana. It lacks the back end notes, as well as the front end volatiles.

Banana Treattarome 9730, however, is typical of the complete profile of banana. The components are in balance, and so the flavour is much more authentic. Enhanced levels of pentan-2-yl and isoamyl esters ensure a good character impact. Phenolics such as eugenol and elimicin create spicy, smokey and fleshy nuances that are typically missing from traditional banana aromas. Higher levels of these less volatile components ensure that this product is far more tenacious in use. Even during storage of the



The Treattarome range of natural distillates impart the natural ‘zing’ that is needed to ‘finish’ a flavour, modifying top notes and giving a high impact at low dosage levels

finished product, a powerful banana flavour is retained when other aromas have faded away.

Technology delivers the natural taste

Tasty products with a distinct yet authentic taste can now be produced through entirely natural processes. Flavorists can take advantage of the latest advancements in natural flavour ingredients to facilitate the creation of truly imaginative flavours, while maintaining the increasingly important consumer appeal that comes from ‘natural’ labeling.

Dr John Boddington is Natural Research & Development Manager at Treatt plc

Treatt manufactures and supplies a vast inventory of innovative products including essential oils, their natural fractions and aromatic chemicals for the flavour and fragrance industries, exporting to 80 countries with global sales reaching £25m. Consistent product quality is ensured through the company’s comprehensive technical expertise, coupled with its experience in raw material selection and worldwide sourcing. The company has manufacturing sites in the UK, USA, a sales office in Singapore and a network of agents throughout the world.

For further information, please contact Giles Bovill, Treatt plc, Northern Way, Bury St Edmunds, Suffolk, IP32 6NL, UK. Tel: +44 (0) 1284 702500. Fax: +44 (0) 1284 703809. Email: giles.bovill@rctreatt.com. Internet: www.treatt.com