



## Impact Flavour Chemicals & Their Influence On Taste Perception.

Steve Carter 2017

**What are flavourings and why do we use them?**

**Is flavour strength dependant on the product type?**

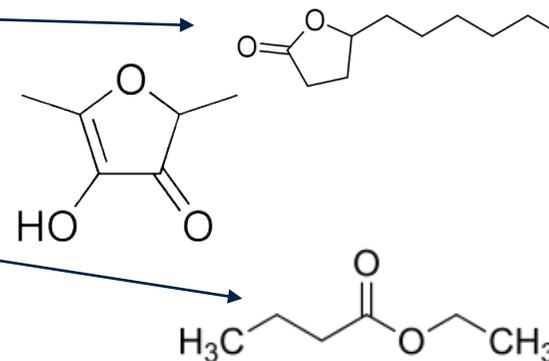
**What are the external influences on how food tastes?**

**Playing tricks with your taste buds.**



## What are flavourings and why do we use them?

**INGREDIENTS:** AQUA (90.9%), **SUGARS (4.9%)** (FRUCTOSE (50%), GLUCOSE (41%), SUCROSE (9%)), FIBRE E460 (2.0%), ASH, **FATTY ACIDS (<1%)** (OMEGA-6 FATTY ACID: OCTADECADIENOIC ACID (42%), OMEGA-3 FATTY ACID: OCTADECATRIENOIC ACID (31%), OCTADECANOIC ACID (20%), HEXADECANOIC ACID (6%), OCTADECANOIC ACID (1%), HEXADECANOIC ACID (<1%)), **AMINO ACIDS (<1%)** (ASPARTIC ACID (26%), GLUTAMIC ACID (17%), LEUCINE (6%), ALANINE (6%), LYSINE (5%), GLYCINE (5%), ARGININE (5%), PROLINE (4%), SERINE (4%), TYROSINE (4%), THREONINE (4%), ISOLEUCINE (3%), PHENYLALANINE (3%), VALINE (3%), HISTIDINE (2%), TRYPTOPHAN (1%), CYSTINE (1%), METHIONINE (<1%)), **PRESERVATIVES** (E236, E296) **COLOURS** (E160a, E161b, E161c, E140, E161d, E161e, E161g, E161h) E300, E307, FOLATE, CHOLINE, BETAINE, PHYTOSTEROLS, **FLAVOURS** (2,5-DIMETHYL-4-HYDROXY-2H-FURAN-3-ONE, 2,5-DIMETHYL-4-METHOXY-2H-FURAN-3-ONE, GAMMA-DECALACTONE, GAMMA-DODECALACTONE, 2-FURFURAL, 5-HYDROXY METHYL-FURFURAL, LIMONENE, LINALOOL, (E)-NEROLIDOL, E1510, HEXANOL, OCTANOL, METHYL BUTANOATE, ETHYL BUTANOATE, METHYL HEXANOATE, ETHYL HEXANOATE, HEXYL ETHANOATE, (E)-2-HEXEN-1-YL ETHANOATE, BUTYL ETHANOATE, METHYL OCTANOATE, ETHYL OCTANOATE, OCTYL-2-METHYL BUTANOATE, OCTYL HEXANOATE, DECYL BUTANOATE, DECYL ETHANOATE, METHANETHIOL, ETHYL 3-METHYLBUTANOATE, GERANIOL, E210, FARNESYL ACETATE, MESIFURANE, METHYL ANTHRANILATE, GAMMA-DECALACTONE, METHIONAL, DIMETHOXYMETHANE, 1-BUTOXY-1-ETHOXYETHANE), 2-(4-HYDROXYPHENYL)-ETHYL BETA-D-GLUCOPYRANOSIDE.



## What are flavourings and why do we use them?

Natural Flavourings can be raw materials obtained from plant or animal.

Compounds produced from plant or animal by means of physical, enzymatic or microbiological processes, ie. Lavender oil is produced by steam distillation of the freshly cut flowers.

Natural Flavouring molecules can be isolated from a plant or animal, eg. Linalyl Acetate & Linalool which occur naturally in Lavender oil (30-40% & 30-35% respectively)



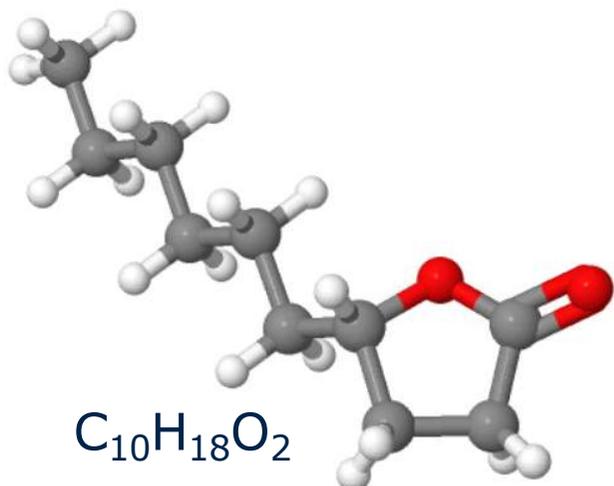
## Is flavour strength dependant on the product type?

Flavour strength, profile and the length of time a flavour remains in the mouth are all affected by the interactions of the matrix.  
 Delivering a comparable flavour in a full fat yogurt requires differing multiples for each molecule.

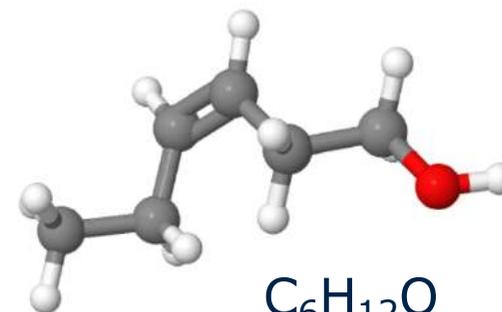
Molecule	Formula for Drink	ratio	Formula for Yogurt
ETHYL BUTYRATE	1.50	2.5	3.75
FURANEOL 15% in ETHANOL	20.00	1.1	22.00
Methyl-Cinnamate 10% in ETHANOL	4.00	8	32.00
cis-3-HEXENOL	4.00	1.2	4.80
gamma-DECALACTONE	0.60	8	4.80
PROPYLENGLYCOL	69.90		32.65
	100		100
Dosage of flavour is 0.1% for drink			

## Is flavour strength dependant on the product type?

The flavours in food drive quality and acceptance for all food and beverages. When we eat food the flavour compounds are released at different rates, this is influenced by the physical and chemical properties of each molecule and the finished product.



Decalactone Gamma


$$\text{C}_6\text{H}_{12}\text{O}$$

cis-3-Hexenol

## What are the external influences on how food tastes?

The way food is perceived is not only from taste or aroma, but all senses. (*Charles Spence's Gastrophysics, 2017*) which studies psychological science, neuroscience & design, and their importance on how food is perceived.

At Doehler we are being challenged daily to make sugar reduced products taste as good as the original. Colour and texture are very important in delivering the right taste, we have been using these tricks for years but only now is it being seen as a science.



How Turbidity and colour effect your expectations



## Playing tricks with your taste buds.

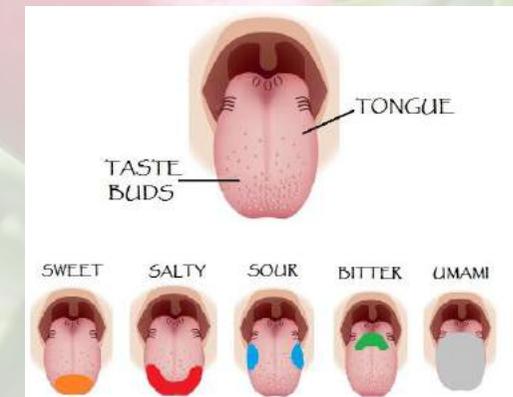
Taste buds play a big part in determining the basic tastes, sweet, salty, sour, and bitter. Signals travel to the brain to identify the flavour.

Companies like Doehler are always looking for ways to reduce sugar and salt so that products can have a healthier claim, without compromising on taste, we can already reduce sugar 50% without compromise but what's next?

Let's take Miracle Berry as a fun example.

Miracle Berry causes sour foods to taste sweet. The effect is due to a glycoprotein called miraculin.

The berry itself has a low sugar content, when eaten, this molecule binds to the tongue's taste buds, causing sour foods to taste sweet.



# Let the senses do the tasting.

<https://www.youtube.com/watch?v=9H2l87Uu9us&feature=youtu.be>



**Smell!**



**Feel!**



**Sound!**



**Taste!**



**Sight!**



**Enjoy!**

