



# Fruit Juice

***Are fruit juices good for you?***



# The popularity of fruit juice

Fruit juice manufacturers market their juice as 100% pure - a healthy and nutritious drink to include in your diet.

With sales pitches such as:

*“two serves of fruit in every glass”*

*“drink juice to reach your five a day”*

... it's not surprising that consumers perceive shop-bought juice to be beneficial for health.





# Is fruit juice healthy, *really*?

It looks healthy, it sounds healthy... but how does fruit juice *really* stack up?

**If you squeeze the fruit yourself, fruit juice is healthy** – it contains valuable nutrients, including vitamins, minerals and antioxidants.

Industrial produced fruit juice (the type you buy in the shops) is a different matter.

Manufacturers claim their juice is 100% pure and natural, but is this true?





# Types of fruit juice

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Fruit juices are generally categorised as:

- **Freshly squeezed** - juice that is pressed from the whole fruit.
- **From concentrate** – this is the thick, sticky syrup which is left after the juice is extracted from the fruit and the water is evaporated.
- **Not from concentrate** - juice is extracted from fruit, pasteurised, de-aerated (to prevent oxidation) and stored in large aseptic tanks.
- **Nectars** - syrupy juice with added sugar/ sweeteners, colours and preservatives. Bulked out with water and contains little juice (5%).



# Manufacturing juices

**Juice brands mislead consumers** by labelling their juice as 100% pure and natural when this is far from the truth.

Here is how industrial juice is really made:

- **Fruits are squeezed** to extract the juice.
- **Juice is stored in aseptic vats** (for up to 1 year) where it's **pasteurised** and **oxygen is removed**, stripping the juice of nutrients and its natural flavour.
- **Flavour packs are added** to the juice to re-introduce flavour and aroma once the juice is ready for packaging.

(Roston, T, 2012)





# Pasteurisation of fruit juice

Pasteurisation is the application of heat to eliminate pathogens and extend shelf-life. **This process reduces nutrient levels.**

In orange juice, pasteurisation has been shown to **decrease vitamin C** and **carotenoids.**

These are essential nutrients and antioxidants to support immune health.



# What are flavour packs?

Flavour packs are added to juice to **reintroduce a standardised flavour profile** once it has been stripped of oxygen.

- They are made with the leftover pulp, zest and skin of the fruit. Plus, a cocktail of harmful chemicals to ensure the juice tastes the same all year round.
- Companies **don't have to list flavour packs on the label**, simply calling them "natural flavouring".

(Chan, C, 2011)





# How flavour packs are made

**Making citrus flavours is a complex procedure** and involves lots of chemical processing, with many **chemicals remaining in the finished product.**

Getting the smell and taste right involves combining various different flavours and compounds.

For orange juice, the orange essence and oil is collected during evaporation and sold to flavour manufacturers so they can **reconfigure these by-products into flavour packs.**

(Hamilton, A. Squeezed, 2009)





# The secret flavour formula

Juice companies **hire flavour and fragrance companies** to engineer flavour packs, the same ones that formulate perfumes for Dior and Calvin Klein.

**The formulas vary to give a brand its trademark taste.** Coca-Cola's Minute Maid has a candy-like orange flavour. Some brands request flavour packs that mimic their competitor's taste.

(Hamilton, A. Squeezed, 2009)





# The secret flavour formula

The exact formula and chemical composition of flavour packs is a mystery, **companies keep their “secret formula” well-hidden.**

This wall of secrecy has concerned the FDA since the 1960's. )

(Hamilton, A. Squeezed, 2009)



# Known chemicals in flavour packs

**Ethyl butyrate** is the main chemical found in orange juice.

It's naturally found in citrus foods but **manufacturers add more synthetic ethyl butyrate to flavour packs** as it imparts the fragrance associated with a freshly squeezed orange.

Synthetic ethyl butyrate is known to **cause skin and respiratory irritation.**

(Hamilton, A. Squeezed, 2009)





# Known chemicals in flavour packs

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- **Decanols**: the same substances used to manufacture plasticisers, lubricants, surfactants and solvents. Have been **linked to acne, breast pain** and **abnormal bladder contractions**.
- **Aldehydes**: chemical compounds used in tanning/ embalming products, fungicides and insecticides. **Genotoxic** and **carcinogenic**.
- **Alcohol**: in order to create the essence in orange oil, a large volume of alcohol is used due the volatile nature of the oils.
- **High levels of pesticide residue** is found in the orange oil sourced from Indonesia and Brazil where pesticide regulation is poor.

# The fructose in fruit juice

- Fructose is a naturally occurring simple sugar (monosaccharide) found in fruits, fruit juices, certain vegetables and honey.
- **Whole fruit contains fibre** which slows down fructose absorption into your blood stream. As fibre is taken out of fruit juice, fructose is absorbed at a much quicker rate.
- Unlike glucose which can be transported directly into cells to be used as energy, **fructose needs to be converted to glucose by the liver** before it can act as a body fuel.





# How fructose affects the body

The liver can cope with small amounts of fructose, converting it to glucose to be used as energy.

However, **larger amounts of fructose are converted by the liver to fatty acids** and triglycerides and **stored as fat** in a poorly regulated process.

When the liver is getting overloaded, converted fructose may store in the liver itself **contributing to 'fatty liver'**.

(Bray & Popkin, 2014)





# Risks of high fructose consumption

**Consuming too much fructose is not good for your health.**

It can cause:

- Weight gain and obesity
- Type 2 diabetes
- Heart disease
- Non-alcoholic fatty liver disease
- Metabolic syndrome



# Apple juice concentrate

- Apple juice concentrate is used to sweeten a myriad of foods and beverages.
- Found in 7% of all foods and beverages in the US food supply.
- China is the largest supplier of apple juice concentrate globally.



# Apple juice concentrate

- Apple juice concentrate is **used as a sweetener or to enhance other fruit characteristics** in candies, fruit snacks, jams, jellies, sauces and beverages.
- It's a versatile ingredient as it has a neutral colour and flavour.
- **Juice concentrates are “fat mimetics”**, used to replace fats in low-fat products because they retain water and provide bulk, which improve the appearance and "mouth feel" of the food.
- Manufactures use concentrates as **they can claim their products are made from “real fruit juice”**.



(Harvard, 2006)

# The effects of juice concentrates

Fruit juice concentrates are **empty calories**. They don't contain the vitamins, minerals, phytochemicals and fibre of whole fruit.

Although they may seem healthier and more natural than High-Fructose Corn Syrup (HFCS), fruit juice concentrates have high levels of fructose. **Concentrated apple juice is 65% fructose**, higher than the 55% fructose content of HFCS that is used in soft drinks.





# Issues with apple juice production

- **Excessive amounts of chemicals and fertilisers** are used to produce apples, especially in China, the largest supplier of apple juice concentrate globally.
- China has poor environmental waste management practices and a lack of food safety regulations.



(Fronek, 2014)

# Issues with apple juice production

- If apples go rotten, **they produce a mycotoxin** called patulin, which is resistant to pasteurisation. It's a known carcinogen and is associated with gastrointestinal disturbance, nausea and vomiting.
- Non-organic apples have **high chemical residues** including arsenic which is linked to cancer and skin lesions.



(Fronek, 2014)



# The sugar epidemic

Consumption of fruit juice is on the rise – **people perceive shop-bought juice to be a healthy alternative to soft drinks.**

- Drinking juice only adds more sugar to people's fructose-laden diets.
- In the US, over **74% of all foods contain some sugar** either in the form of sucrose, (50% glucose, 50% fructose), high fructose corn syrup and fruit juice concentrates (also high in fructose).



(Bray & Popkin, 2013)

# What's the alternative?

- **Only drink freshly squeezed juice** (made yourself).
- **Use organic fruit** where possible to avoid unwanted pesticide residue.
- **Drink fruit juice in moderation** due to its high sugar content.
- Opt for **low-starch vegetable juices** or **eat the whole fruit.**





# Things to be aware of

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- **Yin constitutions should not drink fruit juice** as fruits are very yin, causing body imbalances. To learn which constitution you are, go to: <https://www.chinesemedicineliving.com/acupuncture/are-you-yin-or-yang/>
- **Fruits need to be combined correctly** – don't mix acidic fruits (oranges/ grapefruit) with sweet fruits (mango/ melon).
- **Don't juice fruits and vegetable together** as it's not good for digestion.
- Those **with candida, diabetes** and **compromised immunity** (such as the elderly or chronically ill) shouldn't drink fruit juice due to its high sugar content.



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