



100% FRUIT JUICE KNOWLEDGE

**Guidebook from
Haus Rabenhorst**



Juices are not all created equal



Juices are not all created equal

The fruit and sugar content in fruit juices always raises questions among consumers. Due to its valuable ingredients, the German Nutrition Society (DGE) categorises fruit juice as „liquid fruit“ and thus as a plant-based food and not as a drink. Accordingly, a glass of fruit juice can occasionally replace a portion of fruit from time to time. Nevertheless, claims to the contrary regarding fruit juice consumption persist very stubbornly. In the discussion, fruit juice is repeatedly equated with fruit nectar, fruit juice drinks or even with soft drinks, which leads to a generalisation and contributes to consumer uncertainty. The fruit content of fruit juices is strictly regulated in the Fruit Juice and Refreshment Drinks Ordinance¹. This also clearly states that no sugar may be added to fruit juices, for example. The fruit juice guidebook from Haus Rabenhorst provides the most important facts and gives helpful recommendations and tips for fruit juice consumption.

We hope you enjoy discovering it

Yours, Haus Rabenhorst

¹https://www.gesetze-im-internet.de/frsaftv_2004/FRSaftErfrischGetrV.pdf





Overview

	page
A little juice lore	4
Legal requirements	6
Labelling	8
Sugar issues	10
Enjoying fruit juice	12
Drinking recommendations	14





A little juice lore

The differences: pure juice, fruit juice concentrate, nectar and fruit juice drinks

A pure **juice from first pressing** contains only the original components of the processed fruit. Certain sensory variations must be accepted, as it is not possible to standardise the taste and aroma. The advantage, however, is that pure juices are only pressed once and cloudy substances are hardly removed. All valuable ingredients are preserved.

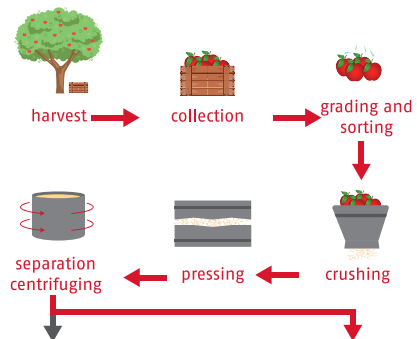
For juices made from **fruit juice concentrate**, the freshly pressed juice is first separated into its individual components of water, natural fruit flavouring and concentrate, before being combined into a standardised product. This process makes it possible to compose a juice that always tastes the same. Using apple juice production as an example, the two

different production methods are shown on the next page.

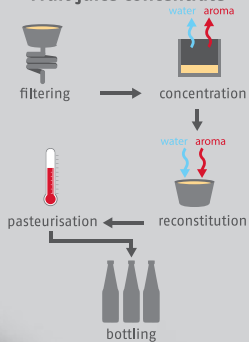
Pure juices from certain types of fruit, such as currants and bananas, are not usually consumed in a pure form as juice, because they are particularly acidic or viscous. They are processed into **fruit nectar** and are a combination of fruit juice or fruit pulp, water and possibly sugar or honey.

Fruit juice drinks consist mainly of water and are available with and without carbonic acid. The fruit content comes from the specified fruit. In addition, drinking water or mineral water, natural fruit flavours, possibly sugar and edible acids, e.g. fruit acids, are sometimes added.

Apple juice production



Fruit juice concentrate



Pure juice





Legal requirements

The factcheck: fruit content and the addition of sugar, colouring and preservatives

According to the Fruit Juice Ordinance², a **fruit juice**, regardless of whether it is pure juice or fruit juice from concentrate, must always fulfil the following characteristics:

1. 100% fruit content
2. No added sugar or other sweeteners
3. No added colourings or preservatives

The **sugar** contained in the fruit juices thus comes exclusively from the pressed fruit. This is composed only from the sugars naturally contained in the fruit: glucose, fructose and sucrose. Only selected additives are permitted, such as antioxidants (e.g. ascorbic acid or citric acid) and stabilisers (e.g. pectins).

While a fruit juice always has a **fruit content** of 100 %, a nectar, depending on the type of fruit, consists of 25–50 % fruit (for examples see overview on p.7). Fruit juice drinks from citrus juices must contain at least 6 %, pome fruit and grape juices at least 30 % and other fruit juices must contain at least 10 % fruit content.

In contrast to fruit juices, for fruit nectars and fruit juice drinks the **addition** of sugar and other sweeteners are permitted. In the case of fruit nectars, up to 20 % sugar may be added. Colourings and preservatives may not be included. For fruit juice drinks there is no restriction on the amount of sugar. As a rule, a maximum of 100 g of sugar per litre is used. Besides water and sugar, the addition of flavourings, colourings and other additives, except alcohol, are permitted.

² https://www.gesetze-im-internet.de/frsaftv_2004/FrSaftErfrischGetrV.pdf





Fruit juice ³	Fruit nectar ³	Fruit juice drink ⁴
<ul style="list-style-type: none"> • Fruit content 100 % • Fruit juice e.g. from the following types of fruit: Apple Orange Grapefruit Grape Pomegranate Sea buckthorn Cherry Berries like cranberries, chokeberries, elderberries, cowberries, wild blueberries or blackcurrants • Also as a mixture: multi-fruit juice 	<ul style="list-style-type: none"> • Fruit content min. 25 to 50 % per fruit type • Examples for fruit nectar (min. %): Apricot nectar (40 %) Blackcurrant nectar (25 %) Cranberry nectar (30 %) Blackberry nectar (40 %) Raspberry nectar (40 %) Passion fruit nectar (25 %) Mango nectar (25 %) 	<ul style="list-style-type: none"> • Fruit content depends on fruit type, but min. <ul style="list-style-type: none"> – 30 % fruit for pome fruit or grapes – 6 % for citrus fruits – 10 % for other fruit • Contains small amounts of fruit juice, fruit pulp or mixtures thereof and e.g. drinking water, natural fruit flavours, possibly sugar and edible acids
<ul style="list-style-type: none"> • Without colourings and preservatives 	<ul style="list-style-type: none"> • Without colourings and preservatives 	<ul style="list-style-type: none"> • Label and ingredient list show the exact composition
<ul style="list-style-type: none"> • Without added sugar 	<ul style="list-style-type: none"> • Types of sugar in accordance with the Ordinance on Types of Sugar, fructose syrup, sugars derived from fruit sugars, honey and sugar substitutes 	<ul style="list-style-type: none"> • Types of sugar in accordance with the Ordinance on Types of Sugar, fructose syrup, sugars derived from fruit sugars, honey and sugar substitutes

³ Ordinance on Fruit Juice, Certain Similar Products, Fruit Nectar and Caffeinated Soft Drinks (Fruit Juice and Refreshment Drinks Ordinance – FrSaftErfrischGetrV)

⁴ <https://www.deutsche-lebensmittelbuch-kommission.de/fileadmin/Dokumente/leitsaetzeerfrischungsgetraenke.pdf>



Labelling

The distinguishing aids: designation, list of ingredients and nutritional value table

If the word fruit juice, e.g. orange juice, is alone on the packaging, it always contains 100 % fruit – regardless of whether it is fruit juice from concentrate or pure juice.





Since by law there is no deviation regarding the rule of thumb, **fruit juice = 100 % fruit**, manufacturers do not have to state the fruit content on the bottle label. The indication „100 percent fruit content“ is voluntary. On the other hand, for fruit nectar and fruit juice drinks the **product description** on the front of the product states the respective fruit juice content.

On the **back of the packaging** there is an ingredients list and nutritional information. For fruit juices „sugar“ is never listed as an ingredient in the **list of ingredients**, as the sugar

comes exclusively from the pressed fruit. Since fruit nectars and fruit juice drinks can contain added sugar, the types of sugar used must be listed in the list of ingredients. Flavourings, colourings and preservatives, which are permitted in fruit juice drinks, are also declared here.

The **nutritional value table** gives a detailed overview of all nutrients. However, the origin of the individual nutrients is not considered. For fruit juice as well as nectars and fruit juice drinks, the sugar content is declared under „Carbohydrate, of which sugars“. The difference: fruit juice only contains the sugar content that is naturally in the fruit. In the case of nectar and fruit juice drinks, sugar content from other sugar types is added.

The following table uses the example of orange juice to illustrate the differences in ingredients and nutritional values compared to the fruit:

 Oranges	 Orange juice Pure juice or fruit juice from concentrate	 Orange nectar	 Orange juice drink
	Ingredients: Oranges	Ingredients e.g.: Orange juice from orange juice concentrate, water, sugar	Ingredients e.g.: Carbonated water, orange juice concentrate (10%), sugar, lemon juice concentrate (2%)
Average values per 100 g (extract)⁵: Energy (in kJ/kcal): 189 kJ / 45 kcal Carbohydrate (in g): 8 g of which sugars (in g): 8 g Fibre: 1,6 g Vitamin C: 45 mg	Average values per 100 g (extract)⁵: Energy (in kJ/kcal): 186 kJ / 44 kcal Carbohydrate (in g): 9 g of which sugars (in g): 9 g Fibre: 0,2 g Vitamin C: 45 mg	Average values per 100 g (extract)⁵: Energy (in kJ/kcal): 261 kJ / 62 kcal Carbohydrate (in g): 14 g of which sugars (in g): 14 g Fibre: 0,2 g Vitamin C: 20 mg	Average values per 100 g (extract)⁵: Energy (in kJ/kcal): 197 kJ / 47 kcal Carbohydrate (in g): 12 g of which sugars (in g): 12 g Fibre: 0,1 g Vitamin C: 1 mg

⁵ Heseker / Heseker Die Nährwerttabelle



Sugar issues

The most pressing questions that consumers in the flood of information about fruit juice seem to be most confused by again and again are:

Does fruit juice contain sugar?

Yes, of course. Fruit juice contains the same amount of sugar that is contained in the fruit from which it was pressed, because fruit juice is liquid fruit. Furthermore, **no sugar may be added** to fruit juice. Fruit juice therefore contains, like the original fruit from which it was made, so-called simple sugars, grape sugar (glucose) and fructose, as well as sucrose. Sucrose is a double sugar. It is formed by the two simple sugars, namely glucose and fructose. Depending on the type of fruit, the content and ratio of these sugars vary to a greater or lesser extent. The fruit varieties with the highest sugar content are grapes, pomegranates, mangos, cherries, figs and passion fruit.⁶



Fruit juice always has a fruit content of 100%



No added sugar or other sweeteners



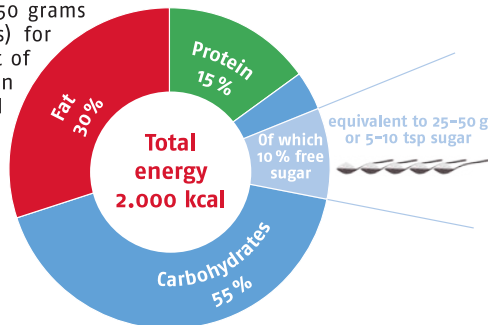
Fruit juice contains only natural fruit sugar

⁶ Hesecker / Hesecker Die Nährwerttabelle

What effects can the regular consumption of fruit juice have due to the sugar it contains?

The World Health Organization (WHO) divides sugars into „intrinsic sugars“, which are a natural component of fruit and vegetables, „lactose“, which is a natural ingredient of dairy products, and into „free sugars“.⁷ According to WHO and DGE, free sugars should account for less than ten percent, or better yet five percent, of the total energy intake. This corresponds to about 25-50 grams (five to ten teaspoons) for an energy requirement of 2,000 kcal.⁸ The sugar in fruit juices is classified as free sugars.⁸

Studies indicate that the predominant sources of free sugars are confectionery, sweets, biscuits, sweetened beverages, fruit nectars and fruit juices.⁹ Moderate consumption of fruit juice according to the current recommendations in a balanced diet has no significant positive or negative effect.⁸



⁷ World Health Organization (2015) Guideline: Sugar intake for adults and children. Geneva; <https://www.who.int/publications/i/item/9789241549028>

⁸ Ruxton CHS, Myers M (2021): Fruit Juices: Are They Helpful or Harmful? An Evidence Review. *Nutrients*, 13.

⁹ https://www.mri.bund.de/fileadmin/MRI/Themen/Reformulierung/Reformulierung_Thema-Zucker.pdf


Fruit juice enjoyment

The correct classification: fruit juice is „liquid fruit“, not a thirst quencher

In the discussion about the consumption of fruit juice, two decisive factors seem important for consumers to enjoy fruit juice with a clear conscience.

1. A balanced diet aims to supply the body with sufficient amounts of all nutrients, and thus to prevent an undersupply, but also to avoid an oversupply. **„The right amount“** is the key concept in this context.






The **consumption of fruit juices** contribute to a **balanced diet** because they are naturally rich in vitamins, minerals and phytochemicals.

The health campaign „5 a day“ states that a portion of fruit and vegetables occasionally in the form of a 150–200 ml fruit or vegetable juice can be consumed. A study by Cambridge University even shows that the probability of reaching 5 a day in people who regularly drink fruit juice is 42% higher.¹⁰

2. Understand **fruit juice** for what it is: **liquid fruit**. The DGE classifies fruit juice in its food pyramid, based on its ingredients and high nutrient density, as a plant on a par with fruit and not as a drink.

Conclusion: Whoever understands fruit juice as a „liquid fruit“ and enjoys it consciously and in moderation, and not as a thirst quencher, has nothing to worry about.



¹⁰ Gibson, S (2012): Fruit juice consumption in the National Diet and Nutrition Survey (NDNS 2008–2010): associations with dietary quality and indices of obesity and health. Proceedings of the Nutrition Society 71, (OCE3), E232.

Drinking recommendations

A glass of fruit juice

... either pure, as a vitamin boost with breakfast or with supper, is an excellent source of vitamins, minerals and secondary plant substances,

... as a fruity snack between meals,

... or as a fruit juice spritzer with still or carbonated water or unsweetened tea, mixed in a ratio of 2/3 to 1/3.







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