

FICHE NUTRITIONNELLE

PINEAPPLE



Apport calorique

54,40 kcal pour 100 g

85,50 g Eau

1,20 g Fibres

11,70 g Glucides

0,84 mg Manganèse

19,60 µg Vitamine B9

Raw food



DESCRIPTION

- Pineapple (*Ananas comosus* L.) belongs to the **Bromeliaceae** family.
- It is a plant native to Central and South America.
- Costa Rica is the leading producer of pineapple for the fresh market ([CIRAD, 2016](#)).
- The main varieties of pineapple are Cayenne Smooth, Sweet (or Del Monte Gold®), Sugar Loaf, Queen and MD2 or « Rompine ».

PHYSICAL AND ORGANOLEPTIC CHARACTERISTICS

- Pineapple is a **non-climacteric fruit** which means that, once picked, it does not ripen ([Redwan, 2016](#)).
- Its **orange-yellow colour** is derived from a small number of **carotenoids** with 66.90 µg of β-carotene per 100 g, and evolves according to the degree of ripening of the fruit (Brat, 2004; [Aprifel Study – Anses 2017-2019](#)).
- Other carotenoids, such as violaxanthin, and various esters of (9Z)-violaxanthin are thought to be responsible for the colour of pineapple flesh ([Steingass, 2020](#)).
- The taste and quality of pineapple depend mainly on factors such as the content in sugars, organic acids (mainly citric and L-malic acids), amino acids and aromatic compounds, and firmness. However, **the taste of pineapple** is mainly influenced by the total concentration of **sugars** and their nature, namely **sucrose, fructose and glucose** ([Zhang, 2012](#) [Ivanova, 2019](#)).
- Sugar content, which varies throughout fruit development, can be affected by environmental factors such as temperature, rainfall and fertilisation ([Dorey, 2016](#)).
- As with carbohydrates, the level of organic acids varies significantly with the state of ripeness of the fruit ([Koia, 2012](#)). These include in particular citric acids.
- Of the 280 volatile compounds identified in pineapple, only a few contribute to its aroma, including 4-hydroxy-2,5-dimethyl-3(2H)-furanone, ethyl 2-methylpropanoate, ethyl 2-methylbutanoate, methyl 2-methylbutanoate and 1-(E,Z)-3,5-undecatriene ([Tokitomo, 2005](#)).

COMPOSITION CHARACTERISTICS (EXCLUDING MACRONUTRIENTS, VITAMINS AND MINERALS)

- Polyphenol composition:
 - Containing a **significant amount of polyphenols** and in particular gallic acid, pineapple has a beneficial action against **oxidative stress** linked to obesity, by protecting red blood cells and pre-adipocytes, and consequently improves the **antioxidant capacities** of the body ([September-Malaterre, 2016](#)).
 - Pineapple contains myricetin, a compound of the flavonol family that has strong antioxidant activity. A daily consumption of this compound (120.5 ± 95.7 mg) is linked to a decrease in the prevalence of **type 2 diabetes** ([Yao, 2019](#)).
 - A Chinese team quantified and compared the phenolic acid, β-carotene and ascorbic acid (AA) contents of seventeen pineapple varieties and their antioxidant activities. The variety 'MD-2', also known as 'Rompine', had the highest levels of AA and total polyphenols, but lower levels of β-carotene. It also had the largest diversity of phenolic compounds and the highest antioxidant activities ([Du, 2016](#)).
- Bromelain composition:
 - **Bromelain, a protease from pineapple, helps reduce thrombogenesis**, and has **antihypertensive and antimicrobial effects**. It also has a potential natural **anticarcinogenic effect** by acting as an immune modulator against tumour cells ([Lee, 2019](#)).

COMPOSITION ET ANALYSE NUTRITIONNELLE

RAW

Values are to be considered as orders of magnitude, likely to vary according to varieties, season, degree of ripeness, growing conditions, etc.

Pineapple provides on average **54.40 calories (kcal)** per 100 g or **231 kJ**.

TABLES OF COMPOSITION

For each nutrient, the tables provide information on the content, minimum and maximum values, and percentage of the Nutrient Reference Values (NRVs) per 100 g net of pineapple.

MACRONUTRIMENTS

Valeurs

Constituant (g)	Teneur moyenne	Min-Max pour 100 g	% VNR
Eau	85,50	82,50 - 91,60	-
Fibres	1,20	NC - 1,50	-
Glucides	11,70	-	4,50
<i>dont Sucres</i>	10,50	6,90 - 11,50	11,67
Lipides	< 0,50	0,05 - NC	-
<i>dont Acides Gras Saturés</i>	< 0,01	0 - NC	-
Protéines	< 0,50	0,30 - 0,74	-

Sources

Constituant (g)	Quantité	Min-Max	% VNR
Eau	Ciquel 2020 (valeur issue des analyses Ciquel-Aprifel 2017)	-	-
Fibres	Ciquel 2020 (valeur issue des analyses Ciquel-Aprifel 2017)	-	-
Glucides	Ciquel 2020	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
<i>dont Sucres</i>	Ciquel 2020 (valeur issue des analyses Ciquel-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011

Constituant (g)	Quantité	Min-Max	% VNR
Lipides	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen, et du conseil du 25 octobre 2011
<i>dont Acides Gras Saturés</i>	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Protéines	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen, et du conseil du 25 octobre 2011

Focus on carbohydrates

- Pineapple's energy comes to it primarily from its carbohydrates, to the tune of 11.70 g per 100 g.
- His carbohydrate content is higher than the average amount found in fresh fruit (11.31 g per 100 g).
- These are mainly sucrose (6.40 g per 100 g), fructose (2.30 g per 100 g) and glucose (1.80 g per 100 g). Their proportion and the rate of carbohydrates in the pineapple depend on its maturation.

Focus on fiber

- Pineapple contains 1.20 g of fiber per 100 g on average, which is below the average for fresh fruit (2.77 g per 100 g).

Focus on fat

- Pineapple **does not contain fat*** as it provides less than 0.5 g per 100 g.

* Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods.

MINÉRAUX ET OLIGO-ÉLÉMENTS

Valeurs

Constituant	Teneur moyenne	Min-Max pour 100 g	% VNR
Calcium (mg)	8	6 - 25,30	1
Chlorure (mg)	21,60	-	2,70
Cuivre (mg)	0,06	0,039 - 0,19	6
Fer (mg)	0,17	0,13 - 0,54	1,21
Iode (µg)	< 20	0,60 - NC	-
Magnésium (mg)	15	9 - 24	4

Constituant	Teneur moyenne	Min-Max pour 100 g	% VNR
Manganèse (mg)	0,84	0,12 - 4,17	42
Phosphore (mg)	8,10	5 - 18,60	1,16
Potassium (mg)	140	81 - 241	7
Sélénium (µg)	< 20	0,60 - NC	-
Sodium (mg)	-	1 - NC	-
Zinc (mg)	0,08	0,04 - 0,15	0,80

Sources

Constituant	Quantité	Min-Max	% VNR
Calcium (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Chlorure (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Cuivre (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Fer (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Iode (µg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen, et du conseil du 25 octobre 2011
Magnésium (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Manganèse (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen, et du conseil du 25 octobre 2011

Constituant	Quantité	Min-Max	% VNR
Phosphore (mg)	Ciqua 2020 (valeur issue des analyses Ciqua-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Potassium (mg)	Ciqua 2020 (valeur issue des analyses Ciqua-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Sélénium (µg)	Ciqua 2020 (valeur issue des analyses Ciqua-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Sodium (mg)	Ciqua 2020 (valeur issue des analyses Ciqua-Aprifel 2017)	-	-
Zinc (mg)	Ciqua 2020 (valeur issue des analyses Ciqua-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011

Focus on minerals and trace elements

- Pineapple is **rich in manganese** as it provides the equivalent of 42% of the NRV for manganese, or 0.84 mg per 100 g.
- The mineral most present in pineapple is potassium with a content equivalent to 7% of the NRVs in potassium, or 140 mg per 100 g.
- The other minerals and trace elements are present in amounts representing less than 7% of NRVs.

VITAMINES

Valeurs

Constituant	Teneur moyenne	Min-Max pour 100 g	% VNR
Provitamine A Béta-carotène (µg)	66,9	17 - NC	-
Équivalent Vitamine A (µg)	11,15	2,83 - NC	1,39
Vitamine B1 (mg)	0,056	NC - 0,11	5,09
Vitamine B2 (mg)	0,033	0,01 - 0,052	2,36
Vitamine B3 (mg)	0,31	0,17 - 1,49	1,94
Vitamine B5 (mg)	0,17	0,05 - 0,45	2,83
Vitamine B6 (mg)	0,052	NC - 0,15	3,71

Constituant	Teneur moyenne	Min-Max pour 100 g	% VNR
Vitamine B9 (µg)	19,60	8 - 36	9,80
Vitamine C (mg)	46,10	7,90 - 70,70	57,63
Vitamine E (mg)	< 0,08	0,02 - 0,10	-
Vitamine K1 (µg)	< 0,80	0,20 - 1,20	-

Sources

Constituant	Quantité	Min-Max	% VNR
Provitamine A Béta-carotène (µg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	-
Équivalent Vitamine A (µg)	Calcul à partir de la valeur Provitamine A Béta-carotène*	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Vitamine B1 (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Vitamine B2 (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Vitamine B3 (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Vitamine B5 (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Vitamine B6 (mg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Vitamine B9 (µg)	Ciqual 2020 (valeur issue des analyses Ciqual-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011

Constituant	Quantité	Min-Max	% VNR
Vitamine C (mg)	Ciquel 2020 (valeur issue des analyses Ciquel-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Vitamine E (mg)	Ciquel 2020	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011
Vitamine K1 (µg)	Ciquel 2020 (valeur issue des analyses Ciquel-Aprifel 2017)	-	Règlement (UE) N°1169/2011 du parlement Européen et du conseil du 25 octobre 2011

Focus on vitamins

- Pineapple is **rich in vitamin C** as it provides the equivalent of 57.63% of the vitamin C NRV, or 46.10 mg per 100 g.
- Vitamin B9 is the 2nd most notable vitamin in pineapple with a content of 19.60 µg per 100 g (or 9.80% of the NRV in vitamin B9).
- The other vitamins are present in amounts representing less than 6% of NRVs.

*Calculation made: Beta Carotene / 6 + retinol

POLYPHÉNOLS

Valeurs

Constituant (g)	Teneur moyenne	Min-Max pour 100 g
Polyphénols totaux	147,91	40,60 - 174

Sources

Constituant (g)	Quantité	Min-Max
Polyphénols totaux	Phenol Explorer 3.6 Méthode utilisée : Folin assay	-

Focus on polyphenols

- Polyphenols are substances with antioxidant effects.
- Pineapple has a notable content of total polyphenols, according to Folin assay analysis.

ALLÉGATIONS NUTRITIONNELLES ET DE SANTÉ

ALLÉGATIONS NUTRITIONNELLES ET DE SANTÉ RAW

According to the definitions of nutrition claims as presented in Regulation (EC) No. 1924/2006 on nutrition and health claims, and in view of the composition of pineapple, the following claims may be used:

PINEAPPLE NUTRITION CLAIMS

- **Fat free** (as 100g of pineapple provides less than 0.5g of fat).
- **Vitamin C rich** (as 100 g of pineapple provides the equivalent of more than 30% of the NRVs).
- **Rich in manganese** (as 100 g of pineapple provides the equivalent of more than 30% of NRVs).

HEALTH CLAIMS (FOR CONSUMPTION OF 100 G OF PINEAPPLE)

Vitamin C

- Vitamin C contributes to:
 - normal function of the immune system during and after intense physical exercise,
 - normal collagen formation for the normal function of blood vessels,
 - normal collagen formation for the normal function of bones,
 - normal collagen formation for the normal function of cartilage,
 - normal collagen formation for the normal function of gums,
 - normal collagen formation for the normal function of skin,
 - normal collagen formation for the normal function of teeth,
 - normal energy-yielding metabolism,
 - normal functioning of the nervous system,
 - normal psychological function,
 - normal function of the immune system,
 - protection of cells from oxidative stress,
 - reduction of tiredness and fatigue,
 - regeneration of the reduced form of vitamin E.
- Vitamin C increases iron absorption.

Manganese

- Manganese contributes to:
 - normal energy-yielding metabolism,
 - maintenance of normal bones,
 - normal formation of connective tissues,
 - protection of cells from oxidative stress.

- National Agency for Food, Environmental, and Occupational Health Safety. Ciqual 2020 food nutritional composition table. Retrieved 7/24/2020 from Ciqual website <https://ciqual.anses.fr/>
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- Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods.
- Commission Regulation (EU) No. 432/2012 of 16 May 2012 establishing a list of permitted health claims made on foods, other than those referring to the reduction of disease risk and to children's development and health.
- Regulation (EU) No. 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No. 1924/2006 and (EC) No. 1925/2006 of the European Parliament and of the Council and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 200/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC, and Commission Regulation (EC) No. 608/2004.
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