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- Immune Function & Eye Health
- A Healthy Glow
- Gut Health
- Pregnancy
Papaya is a unique tropical fruit that should be a regular addition to your shopping basket. Aussie-grown and available all year round, it prides itself as a delicious treat, packed with goodness.

Papaya contains a bundle of antioxidants, including vitamin C and carotenoids, which help build the body’s immune system. A single 150g serve of papaya will provide you with more than twice your recommended daily intake of vitamin C and nearly a third of vitamin A.

Enjoyed as a sweet or savoury food, papaya contains a number of nutrients and antioxidants with superior health benefits - boosting gut health and immunity, assisting with normal cell division and growth during pregnancy and helping skin cells to grow and repair.

Within this report I refer to the fruit as papaya*, which is considered the same nutritionally as papaw.

Red Papaya is a pear-shaped tropical fruit with green/yellow skin, it has a bright orange, smooth flesh with a sweet flavour. Yellow Papaw is rounder than papaya, with yellow/orange skin, bright yellow/orange flesh and a less sweet flavour.

Papaya is a simple snack to add to your family’s diet that is bursting with essential nutrients, to help with digestive health and immune wellbeing. The soft and mushy texture of papaya is also perfect for teething babies.

Paired with coconut, passionfruit or lime, or cooked with curries and pork dishes, papaya is a healthy and delicious treat that my whole family loves – and I’m sure yours will too.

*In this report, papaya, papaw and Carica papaya are considered the same nutritionally and are referred to as “papaya” throughout.
The Facts on Papaya

From digestive and immune wellbeing to skin hydration and elasticity, papaya is loaded with delicious goodness.

For the average Australian, a serve of papaya (150g) provides all their vitamin C needs, almost a third of vitamin A needs, and more than a quarter of folate needs.

**VITAMIN A**  **VITAMIN C**  **FOLATE**

**Aussie-grown papaya is available all year round**

With peaks in spring and autumn

**5 GOOD REASONS TO EAT PAPAYA**

- **BOOST YOUR IMMUNITY**
- **GLOWING SKIN**
- **PERFECT BEFORE, DURING AND AFTER PREGNANCY**
- **GOOD GUT HEALTH**
- **FEEL FULLER FOR LONGER**

**TIP**

To pick a perfect papaya, give your papaya a gentle squeeze under the stem. If it’s ripe, it will give slightly. If it’s a bit hard, ripen your papaya in the fruit bowl then store it in the fridge.

**SIMPLE SNACK**

Use papaya in both sweet and savoury dishes. They pair well with coconut, passionfruit, seafood, curries and pork. Squeeze fresh lime on top for a fresh snack.
The Australian Dietary Guidelines recommend Australians eat a minimum of two serves of fruit a day. A standard serve of fruit is 150g, which is equivalent to one medium piece of fruit, two small pieces of fruit or a cup of diced fruit.

Unfortunately half of all Australians (51%) do not eat enough fruit.¹

A standard serving size (150g) of papaya translates to around a third of an average papaya – making it a perfect choice to share or enjoy over a few days.

One in two (51%) Australians do not eat enough fruit.¹
Nutrition Profile

Papaya packs a nutrition punch. For the average Australian, a serve of papaya (150g) provides all their vitamin C needs, almost a third of Vitamin A needs and more than a quarter of folate needs. It also contains a unique combination of antioxidant carotenoids, which help keep immune systems healthy and fight free radical damage.

**Vitamin A**: A 150g serve of papaya contains almost a third of an adult’s daily vitamin A needs (30% of the RDI). Vitamin A is a fat-soluble vitamin which helps maintain normal reproduction, vision and immune function.²

**Vitamin C**: A 150g serve of papaya contains more than twice an adult’s daily vitamin C requirements (225% of the RDI). Vitamin C is a water-soluble vitamin and an antioxidant. It helps with the absorption of iron in the body and plays an important role in the growth and repair in all parts of the body, including skin, cartilage, tendons, ligaments and blood vessels, as well as maintaining bones and teeth. As an antioxidant, vitamin C blocks some of the damage caused by free radicals.

**Folate**: A serve of papaya contains more than a quarter of an adult’s daily folate requirements (28% of the RDI). Folate is a water-soluble vitamin that plays an important role in helping the body form red blood cells, is important for proper brain function and aids in the production of genetic material. It also works closely with vitamin B12 to help make red blood cells.²
The beneficial effects of adequate folate before conception are well established with folate being important for conception and the development of a healthy placenta. Adequate folate is also vital for bub, with research showing it reduces the risk of neural tube defects such as spina bifida.\(^3\)

**Fibre:** Papaya is a source of fibre, a serve contributes just over 10% of daily needs. Fibre is important for maintaining digestive health, regular laxation, reducing blood cholesterol, modulating blood glucose levels, and has also been related to a reduced risk of a number of chronic diseases including heart disease, certain cancers and diabetes.\(^4\)

**Antioxidant Carotenoids:** Papaya provides a unique combination of antioxidant carotenoids. Carotenoids are plant molecules responsible for bright red, yellow and orange pigments in many fruits and vegetables and are thought to play an important role in maintaining health. A combination of carotenoids appears to work together to provide a greater effect than when they are consumed alone.\(^3\)

The carotenoids found in papaya include:

**Beta-carotene:** Beta-carotene is a pigment that gives papaya its yellowish orange colour. Beta-carotene is an antioxidant that protects the body from the damaging effects of free radicals. In the body, beta-carotene converts to vitamin A (retinol).

**Cryptoxanthin:** Like beta-carotene, cryptoxanthin is a precursor for vitamin A and also acts as an antioxidant. Research suggests that cryptoxanthin is more bioavailable from common food sources such as papaya than beta-carotene.\(^5\)

**Lycopene:** Lycopene gives red papaya its colour. It is not found in yellow-flesh papaya. Like beta-carotene and cryptoxanthin, lycopene acts as an antioxidant. As lycopene is fat-soluble, consuming it with fat – like with avocado in a Buddha bowl or regular Greek yoghurt in a smoothie bowl – increases its bioavailability.\(^6\)

**Lutein and Zeaxanthin:** Lutein and zeaxanthin also have antioxidant properties. While the levels in papaya are not as high as found in parsley, spinach, kale and egg yolks, it appears the bioavailability of lutein and zeaxanthin is stronger from fruits than it is from vegetable sources. Studies suggest that almost 100% of the lutein, zeaxanthin (and cryptoxanthin) is absorbed from fruits where as between 19% and 38% is absorbed from spinach and broccoli respectively.\(^7\)

**WHAT ARE FREE RADICALS?**

Free radicals are unstable molecules that are generated either from normal essential metabolic processes in the human body or from external sources such as exposure to x-rays, ozone, cigarette smoking, poor diet, stress, air pollutants and industrial chemicals. An imbalance between free radical production and antioxidant defences lead to long-term damage including premature ageing and poor health.\(^8\) Free radicals may contribute to ageing and the development of conditions such as heart disease and cancer.\(^5\)
## Nutrient Summary

### PAPAYA NUTRIENT INFORMATION

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Per serve (150g)</th>
<th>Per 100g</th>
<th>RDI^/DI~ for average adult</th>
<th>% RDIs/DI for average adult</th>
<th>FSANZ substantiation (Claim) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy (kJ)</td>
<td>213</td>
<td>142</td>
<td>8700</td>
<td>2.4%</td>
<td>Low in energy</td>
</tr>
<tr>
<td>Water (g)</td>
<td>134</td>
<td>89.3</td>
<td>N/A</td>
<td>N/A</td>
<td>High in water</td>
</tr>
<tr>
<td>Protein (g)</td>
<td>0.6</td>
<td>0.4</td>
<td>50</td>
<td>1.2%</td>
<td></td>
</tr>
<tr>
<td>Fat, total (g)</td>
<td>0.2</td>
<td>0.1</td>
<td>70</td>
<td>0.3%</td>
<td>Fat free</td>
</tr>
<tr>
<td>Saturated fat (g)</td>
<td>0</td>
<td>0</td>
<td>24</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Cholesterol (mg)</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
<td>Cholesterol free</td>
</tr>
<tr>
<td>Carbohydrates, total (g)</td>
<td>10.4</td>
<td>6.9</td>
<td>310</td>
<td>3.4%</td>
<td></td>
</tr>
<tr>
<td>Sugars (g)</td>
<td>10.4</td>
<td>6.9</td>
<td>90</td>
<td>11.6%</td>
<td></td>
</tr>
<tr>
<td>Dietary Fibre (g)</td>
<td>3.5</td>
<td>2.3</td>
<td>30</td>
<td>12%</td>
<td>Source of fibre</td>
</tr>
</tbody>
</table>

### Vitamins

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Per serve (150g)</th>
<th>Per 100g</th>
<th>RDI^/DI~ for average adult</th>
<th>% RDIs/DI for average adult</th>
<th>FSANZ substantiation (Claim) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A Eq (μg)</td>
<td>228</td>
<td>152</td>
<td>750</td>
<td>30%</td>
<td>Good source of vitamin A or High in vitamin A</td>
</tr>
<tr>
<td>Vitamin C (mg)</td>
<td>90</td>
<td>60</td>
<td>40</td>
<td>225%</td>
<td>Good source of vitamin C or High in vitamin C</td>
</tr>
<tr>
<td>Folate  (μg)</td>
<td>56*</td>
<td>37*</td>
<td>200</td>
<td>28%</td>
<td>Good source of folate or High in folate</td>
</tr>
</tbody>
</table>

### Minerals

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Per serve (150g)</th>
<th>Per 100g</th>
<th>RDI^/DI~ for average adult</th>
<th>% RDIs/DI for average adult</th>
<th>FSANZ substantiation (Claim) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium (mg)</td>
<td>11</td>
<td>7</td>
<td>2300</td>
<td>0.5%</td>
<td>Low in sodium</td>
</tr>
<tr>
<td>Potassium (mg)</td>
<td>210</td>
<td>140</td>
<td>N/A</td>
<td>N/A</td>
<td>Contains potassium</td>
</tr>
<tr>
<td>Magnesium (mg)</td>
<td>21</td>
<td>14</td>
<td>320</td>
<td>6.5%</td>
<td>No claim</td>
</tr>
</tbody>
</table>

### Carotenoids

<table>
<thead>
<tr>
<th>Carotenoid</th>
<th>Per serve (150g)</th>
<th>Per 100g</th>
<th>RDI^/DI~ for average adult</th>
<th>% RDIs/DI for average adult</th>
<th>FSANZ substantiation (Claim) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta-carotene (μg)</td>
<td>360</td>
<td>240</td>
<td>N/A</td>
<td>N/A</td>
<td>Contains beta-carotene</td>
</tr>
<tr>
<td>Cryptoxanthin (μg)</td>
<td>2025</td>
<td>1350</td>
<td>N/A</td>
<td>N/A</td>
<td>Contains cryptoxanthin</td>
</tr>
<tr>
<td>Lycopene (μg)</td>
<td>2742*</td>
<td>1828*</td>
<td>N/A</td>
<td>N/A</td>
<td>Contains lycopene</td>
</tr>
<tr>
<td>Lutein/Zeaxanthin (μg)</td>
<td>134*</td>
<td>89*</td>
<td>N/A</td>
<td>N/A</td>
<td>Contains lutein/zeaxanthin</td>
</tr>
</tbody>
</table>

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* https://ndb.nal.usda.gov/ndb/foods/show/2305
^ Australia New Zealand Food Standards Code. Schedule 1: RDIs and ESADDIs.
$ Australia New Zealand Food Standards Code. Schedule 4: Nutrition, health and related claims.
~ Australia New Zealand Food Standards Code - STANDARD 1:2.8 - Nutrition Information Requirements.
Health Benefits

**IMMUNE FUNCTION & EYE HEALTH**

Some of the most important carotenoids for human health include beta-carotene, lycopene, lutein, zeaxanthin and cryptoxanthin – all of which are found in papaya. Beta-carotene and beta-cryptoxanthin are especially important because the body converts these plant pigments into vitamin A, which is essential for healthy skin and mucus membranes, optimal immune function and good eye health.

The good news for papaya lovers is that it appears that the carotenoids in papaya are more bioavailable than from other carotenoid rich foods, including tomatoes and carrots.

An intervention study published in the British Journal of Nutrition randomly assigned people to eat meals containing raw carrots, tomatoes and papayas, each of which supplied equal amounts of beta-carotene and lycopene. The bioavailability of beta-carotene from papayas was approximately three times higher than that from carrots and tomatoes, while lycopene was approximately 2.6 times more bioavailable from papayas than from tomatoes.

The beta-carotene and lycopene in papaya is 3 times more bioavailable than they are from carrots and tomatoes.

In addition, the bioavailability of beta-cryptoxanthin from papayas was shown to be 2.9 and 2.3 times higher than that of the other papaya carotenoids beta-carotene and lycopene, respectively. Despite being a small study (n=16), this research provides evidence that papaya represents a valuable source of carotenoids.
A HEALTHY GLOW

Papaya provides many of the antioxidants and nutrients that are essential for healthy glowing skin, including vitamin C, potassium, water and carotenoids.

Carotenoids accumulate in all layers of the skin and contribute to skin colouration to provide a natural glow. It has been reported that carotenoid skin colouration is perceived by young adults to be more healthy and attractive than tanning.12

Two recent intervention studies support the effect of carotenoid-rich fruit consumption in improving skin colour. In a study of 81 students from the University of Nottingham Malaysian campus, consumption of a carotenoid-rich smoothie changed skin colour. The researchers concluded that carotenoid-rich fruit smoothies may be a useful way to help people to increase their daily fruit and vegetable consumption while also providing benefits to appearance.13

In another study published in the Journal of the Academy of Nutrition and Dietetics, researchers found skin colour (defined as yellowness) and fasting blood carotenoid concentrations were significantly higher in women following a high-carotenoid fruit and vegetable diet compared to a diet with low-carotenoid fruits and vegetables over a four week period.12

These findings support the body of evidence that has found papaya provided many of the antioxidants and nutrients like vitamin C, potassium, water and carotenoids that are essential for healthy glowing skin.14

GET YOUR GLOW ON

• Papaya and papaw provides many of the antioxidants and nutrients essential for healthy glowing skin – vitamin C, carotenoids, potassium and water.
• Papaya contains a unique antioxidant bundle – vitamin C and carotenoids – that can assist with skin elasticity, and form and repair skin cells.
• Papaya and papaw’s vitamin C content helps with collagen production, for skin support and elasticity.
• Papaya and papaw are rich in water, which is essential for healthy, glowing skin.
GUT HEALTH

Papaya is a source of fibre, with one serve containing 12% of the daily target for adults and up to 25% of the target for children. It also has a high water content. Both the fibre and water are important for keeping the digestive tract healthy and promoting regular laxation.

Papaya has both soluble and insoluble fibres – which are both essential for healthy gut function.

Soluble fibres attract water and form a gel-like mass, which helps slow down digestion. They are generally fermented by bacteria in the lower intestine and form short-chain fatty acids such as butyrate, acetate and propionate, which act as an energy source for cells in the colon, helping to maintain gut health. They also act like a prebiotic and promote the growth of healthy bacteria in the gut, thereby helping to improve overall health and wellbeing. Soluble fibre also helps lower cholesterol levels and stabilise blood sugar levels.

In contrast, insoluble fibres reach the bowel undigested and play an important role in normalising large bowel function and preventing constipation. Insoluble fibre bulks up stools and speeds up the removal of waste through the gut making it easier to pass. They also control and balance the pH ( acidity) in the bowel, keeping the gut healthy.

PAPAYA CONTAINS

• Fibre and water, which are important for keeping you regular and the gut healthy.
• Soluble fibre, which helps to slow down digestion. Soluble fibre is fermented in the gut and forms short-chain fatty acids that help maintain gut health.
• Insoluble fibre, which reaches the bowel undigested. Insoluble fibre bulks up stools and speeds up the removal of waste, making it easier to pass.
THE PERFECT PREGNANCY PARTNER

- Papaya is high in vitamin C, which can help promote a healthy immune system in babies.
- Papaya is a great choice for mums-to-be because it contains more than a quarter of an adult’s daily folate requirements, which is essential for normal cell division and growth in pregnancy.
- Papaya is a good choice during pregnancy to satisfy hunger being nutrient-rich, low in energy, low in fat and has a moderate GI.

PREGNANCY

Before, during and after pregnancy, papaya’s essential nutrients and antioxidants can help mums promote baby’s growth and development.

A mother’s diet quality can change the development of their offspring in ways that can influence the child throughout their lifetime.\(^{19}\)

Papaya is high in both folate and vitamin A – two nutrients that are essential to the healthy development of babies in early pregnancy.

Folate is important in pre-conception and throughout pregnancy. Studies have found that folic acid supplementation can prevent more than half of neural tube defects such as spina bifida and anencephaly.\(^ {20}\)

Additional vitamin A is required throughout pregnancy for both the growing baby and the mother. Papaya not only provides vitamin A, but also carotenoids such as beta-carotene and cryptoxanthin that convert to vitamin A in the body.

The antioxidants in papaya are likely to be operating in other beneficial ways for maternal and child health that research is only just discovering. Research published in 2018 found that the powerful antioxidant pyrroloquinoline quinone (PQQ) found in papaya can halt or prevent the progression of fatty liver disease in offspring of mice fed a high-fat Western-style diet. This concept is particularly interesting considering the growing body of evidence suggesting that childhood health is influenced by maternal diet and the infant’s microbiome.\(^ {21}\)

“Papaya is high in both folate and vitamin A – two nutrients that are essential to the healthy development of babies in early pregnancy.”
References


Disclaimers:
1. Caitlin Reid has taken all reasonable steps to ensure that the information contained in this report is accurate at the time of production. In some cases Caitlin Reid has relied on information supplied by Bite Communications and Appetite Communications 2014 Papaya Health and Wellbeing Report.
2. This report has been prepared in accordance with good professional practice. No other warranty, expressed or implied is made as to the professional advice given in this report.
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