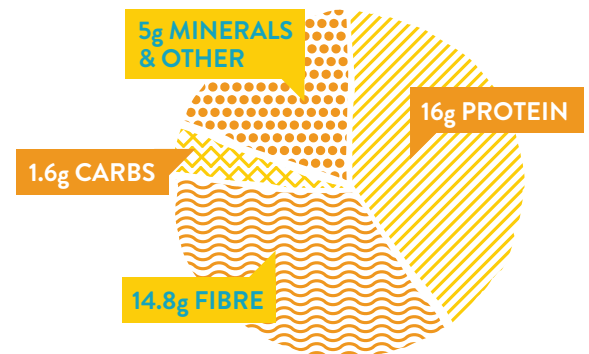




Lupins have been grown and the seed used as food since ancient times.

The Roman writer Pliny said of the lupin that, “If taken commonly at meals, it will contribute a fresh colour and a cheerful countenance”.



Two thousand years later medical scientists have revealed that Australian Sweet Lupins:

- **Increase satiety (appetite suppression by increasing the feeling of fullness) and lower energy intake (eating less calories/kilojoules during the day).**

A study by Archer et al (2004) achieved a 37 per cent reduction in the fat content of sausage patties by replacing meat fat with lupin fibre. The subjects ate fewer kilojoules at the test breakfast but maintained that lowered kilojoule intake for the remainder of the day.

A second study by Ya P Lee et al (2006) found that bread enriched with lupin kernel flour at the expense of wheat flour reduced energy intake and increased the feeling of fullness. Subjects on the lupin bread ate at least 20% less kilojoules. The hormone ghrelin known to stimulate appetite was reduced in the subjects eating lupin bread.

- **Beneficially influence glycemic control (glucose metabolism).**

In short term studies:

Hall et al (2005) found that Australian Sweet Lupin kernel flour inclusion into white bread significantly reduced the blood glucose response and the insulin response of the 11 male test subjects.

Ya P Lee et al (2006) showed that lupin-enriched foods can reduce both blood glucose and insulin levels post digestion.

Dove et al (2011) demonstrated that adding lupin to a sugar rich drink reduced the expected blood sugar spike response.

In long term studies:

A 12 month study by Belski et al (2010) found that a lupin enriched diet significantly lowered fasting insulin concentrations (16% for the men on the trial and 21% for the women) and improved the HOMA scores (HOMA are measurements of insulin resistance and health of the pancreas) by 30% for the men on the trial and 33% for the women.



➤ **Reduces hypertension (Lowers blood pressure)**

Lupins are one of the highest natural sources of the amino acid arginine which has been implicated in having beneficial effects on endothelial function (improved blood vessel performance). However more recently lupin fibre has also demonstrated beneficial effects on blood pressure.

Pilvi et al (2006) found lupin inclusion in the diet had a protective effect by normalizing blood vessel function of rats challenged with a salt loaded diet.

A 16 week intervention trial by Ya P Lee et al (2006) investigated the effect of lupin-enriched bread (40% of the wheat flour was substituted with lupin) on blood pressure. They observed a significant improvement of blood pressure in the subjects eating the 'lupin bread' compared with the group on white bread.

Another 12 month study by Belski et al (2010) also demonstrated a significant blood pressure drop on the lupin group compared with the control group.

➤ **Dietary Fibre (including prebiotic fibre) for improved gut health**

Johnson et al (2006) and Smith et al (2006) found that Australian Sweet Lupin foods reduce transit time, lower the pH of the large intestine (anti cancer) and act as a 'pre-biotic' (food for good bacteria) and significantly increases production of Short Chain Fatty Acids in particular butyrate.

These effects in turn:

- help prevent constipation
- reduces the risk of colon cancer
- improvements in glucose tolerance and the insulin response
- reduction of hyperlipidemia (high fat levels in the blood stream), blood pressure, and other coronary heart disease risk factors increased satiety and hence of weight management.

*Short Chain Fatty Acids are the result of good bacteria digesting good 'fibres'.
SCFA's are very beneficial for human health and in fact butyrate is critical in keeping colon cells healthy and not turning cancerous.*

➤ **Modify the Glycemic Index and reduce the Glycemic Load of carbohydrate foods**

The Australian Sweet Lupin has only 4g per 100g of digestible carbohydrates and therefore has a very low GI (much like an egg). Lupins have the lowest GI of any commonly consumed grains or legumes, and when included into baked product can significantly reduce the carbohydrate loading of that particular food.

➤ **Good source of Fat, Micronutrients and Antioxidants**

Lupin contains approximately 6-7% fat with 81% being unsaturated, and it contains the beneficial omega 3 alpha-linolenic acid (8%). The ratio of omega3 : omega 6 fatty acids (1 : 3.7) is also favourable.

They have high antioxidant content being : carotenoids (lutein & zeaxanthin & beta-carotene) giving lupin its distinctive yellow colour.

In addition they have high mineral content of potassium, magnesium, calcium, zinc and iron

➤ **Gluten free**

➤ **Non GM**

Lupin a highly nutritious, easily digestible, world-class food product. It is arguably the highest source of natural, unprocessed plant protein in existence and may exceed all plant sources, processed and unprocessed, in proteins, digestibility and the **bio-availability** of essential nutrients.

Lupin flake is high in essential amino acids, cholesterol free **BUT** contains **negligible amounts of Trypsin Inhibitors**, known to interfere with digestion often found in other legumes (especially soy)

Lupin flake is also **very low in Lectins and Saponins**, two known gastric irritants, the latter of which afflicts the soybean even after extensive baking and processing.

Lupin flake is also low in **Phytic Acid**, which in the soybean, due to its higher content, binds with calcium and zinc, rendering them nutritionally unavailable.

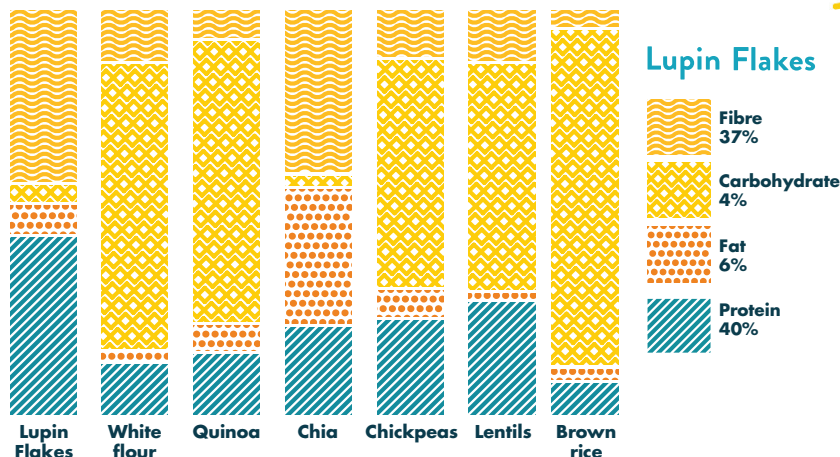
Lupin flake does not require heat or chemical treatment, thus rendering it a superbly healthy food, by any standards.

The only anti-nutritional aspect – the alkaloids, have been bred out, therefore we have the Australian Sweet Lupin.

LUPIN FLAKES NUTRITION PROFILE

| Nutritional Information | | |
|--|---------------|-------------|
| Servings Per Pack: 12 Serving Size : 40g | | |
| | Per 40g | Per 100g |
| Energy | 540kJ | 1350kJ |
| Protein | 16g | 40g |
| Fat | | |
| - Total | 2.6g | 6.4g |
| - Saturated | 0.4g | 1.1g |
| Carbohydrate | 1.6g | 4.0g |
| - Sugars | 1.0g | 2.5g |
| Dietary Fibre | 14.8g | 37g |
| Sodium | 16.8mg | 42mg |
| Calcium | 34.4mg | 86mg |
| Iron | 1.6mg | 4mg |
| Magnesium | 68.8mg | 172mg |
| Potassium | 388mg | 970mg |
| Lutien + Zeaxanthin | 1.76mg | 4.4mg |
| Gluten | 0g | 0g |

LUPIN FLAKES COMPARED TO OTHER GRAINS AND LEGUMES



3 x more protein than quinoa
 x more dietary fibre than oats
 x more potassium than bananas
 x more iron than kale

We're all about honest nutrition that makes a big difference. Our Lupin Flakes are good for you, good for the earth and good for the local growers that we support.