



FOOD STANDARDS
Australia New Zealand
Te Mana Kounga Kai – Ahitereiria me Aotearoa

Australian Sweet Lupin

Nutrient data provided by Grain Growers Ltd, Co-operative Bulk Handling Limited, Lupin Foods Australia and the Grains & Legumes Nutrition Council

May 2015

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In August 2014, Grain Growers Ltd conducted analyses on the nutrient composition of three lupin samples with support from Co-operative Bulk Handling Limited (CBH), Lupin Foods Australia and the Grains & Legumes Nutrition Council (GLNC). FSANZ did not provide any funding for these analyses and was not involved with the collection of samples, quality assurance processes or data validation. FSANZ would like to thank Grain Growers Ltd, CBH, Lupin Foods Australia and GLNC for making this data available.

Background

Australian sweet lupin (sweet lupin) refers to the grain legume crop *Lupinus angustifolius* cultivated in Australia. Like soybean, sweet lupin is high in protein, but it is higher in dietary fibre and lower in fat, while containing minimal starch (See Fig. 1 below).

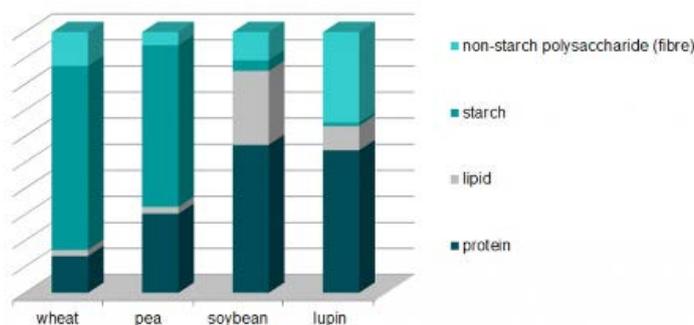


Figure 1: Lupin proximate analysis with other grains¹

Australia is the largest producer of sweet lupin in the world, generating about one million tonnes each year, primarily from Western Australia. Until recently, virtually all of the grain was used in animal feed, with only 15,000 tonnes being sold for human consumption². The latest generation of sweet lupin cultivars comply with the Australia New Zealand Food Standards Code and are recognised as fit for human consumption³.

Sampling

CBH handles over 60% of the WA sweet lupin crop (approximately 3700 grower trading entities). Regular analysis and sampling procedures are implemented during receiving, handling and dispatching to assist with grading and quality of sweet lupin. CBH follows a protocol when sampling each lupin load delivered to their 185 receival points. (See Fig. 2 below).

*A spear is equivalent to a 1 Litre scoop

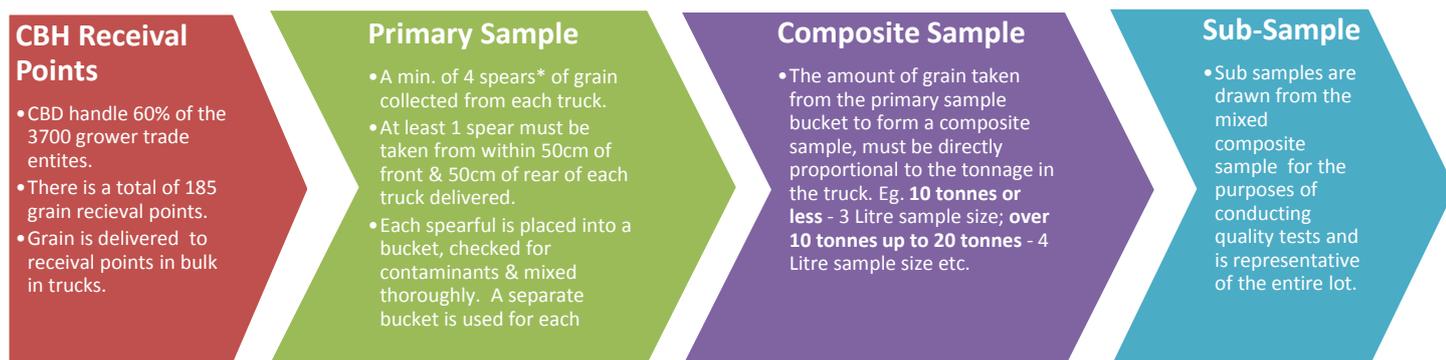


Figure 2: CBH sampling protocol to obtain a representative sample of sweet lupin

CBH provided three lupin samples to Grain Growers for analysis– whole lupin, split lupin and flaked lupin. Whole lupin grains have a thick seed coat/hull consisting mostly of cellulose (insoluble fibre-bran) which requires further processing for human consumption. Lupin splits are whole lupin grains which have been halved and separated from the hull, and lupin flakes are formed by heating and rolling the lupin split⁴.

Preparation and analysis

Grain Growers received approximately 1 kg of each lupin sample for analysis. Three hundred grams of each sample was prepared for analysis by milling using a 0.5mm screen to give particle size suitable for all analytical tests. Grain Growers conducted the analyses at their Sydney laboratories over a period of 4 weeks using methods of analysis that have been accredited by the National Association of Testing Authorities.

Results

A complete set of the results of the analyses are shown in Table 1 below.

Table 1: Nutrient composition of whole lupin, split lupin and flaked lupin (per 100g)

Analyte Description	Units	Sample 1 Whole Lupin	Sample 2 Split Lupin	Sample 3 Flaked Lupin
Energy	kJ/100g	1230	1380	1350
Carbohydrate	g/100g	5.1	7.2	6.4
Sugars	g/100g	2.3	2.8	3.6
Total Dietary Fibre	g/100g	43.6	29.9	29.1
Inulin	g/100g	3.6	4.8	4.7
Total Dietary Fibre + Inulin	g/100g	46.5	33.7	32.9
Insoluble Dietary Fibre	g/100g	40.1	27.8	26.9
Soluble Dietary Fibre (by difference)	g/100g	6.4	5.9	6
Moisture	g/100g	8	7.2	9.7
Ash	g/100g	2.6	2.9	2.8
Protein (N x 6.25)	g/100g	31.3	41.1	40.5
Fat, total	g/100g	6.5	7.9	7.7
-Saturated	g/100g	1.3	1.5	1.6
-Trans	g/100g	<0.1	<0.1	<0.1
-Poly-unsaturated	g/100g	3	3.8	3.5
-Mono-unsaturated	g/100g	2.2	2.6	2.6
-Omega 3	g/100g	0.4	0.5	0.4
-Omega 6	g/100g	2.7	3.3	3.1
-Omega 9	g/100g	2.1	2.5	2.6
Vitamin A (Retinol)	µg/100g	<3	<3	<3
Vitamin B1 (Thiamine)	mg/100g	0.56	0.67	0.64
Vitamin B2 (Riboflavin)	mg/100g	0.02	0.02	0.02
Vitamin B3 (Niacin)	mg/100g	2.2	1.9	2.2
Vitamin B6 (Pyridoxine)	mg/100g	0.1	0.1	0.1
Vitamin E (Alpha Tocopherol)	mg/100g	0.3	0.5	0.3
Calcium	mg/100g	211	84	81
Iron	mg/100g	3.9	4.3	4
Potassium	mg/100g	570	730	715
Magnesium	mg/100g	171	189	188
Sodium	mg/100g	50	50	50
Phosphorus	mg/100g	302	410	404
Zinc	mg/100g	3.4	3.6	3.5

Please note that some values provided above may vary slightly in the NUTTAB publication.

Uses of the data by FSANZ

The results of this analysis will be incorporated into future releases of FSANZ's reference database NUTTAB and the Nutrition Panel Calculator.

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References

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