

LUPIN INCORPORATED NOVEL HEALTHY FOODS AS A SOLUTION TO OBESITY AND MALNUTRITION



Prof Vijay Jayasena and Dr Syed Abbas

**Food Science & Technology, School of Public Health,
Curtin University of Technology**

Centre for Food and Genomic Medicine, Perth, Australia

International Congress on Food Technology

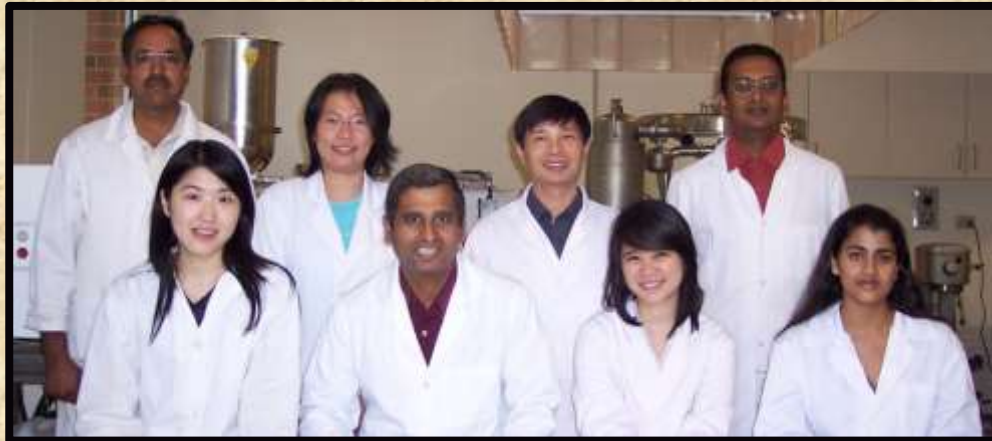
Antalya, Turkey, Nov, 03 - 06, 2010

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Centre for Food & Genomic Medicine

Lupin Research at Curtin

A large team with expertise in



- Food Science & Technology
- Nutrition
- Dietetics
- Food Safety
- Food Micro-biology
- Food Chemistry
- Public Health
- Etc



World Health Challenges

Developed Countries

- Problems due to the (over) consumption of unhealthy (junk) foods
- Obesity, diabetics, cardiovascular diseases



Developing countries

- Problems due to limited availability of foods
- Hunger, malnutrition, starvation



World Health Challenges

Developed Countries

- More than half of the population is overweight (around 60% of Australians are overweight)
- Around 20% children are overweight
- Increased risk of cardiovascular diseases, type 2 diabetes, etc
- Low dietary fibre intake
- High sugar/carbohydrate & fat intake
- Excess food (energy) consumption

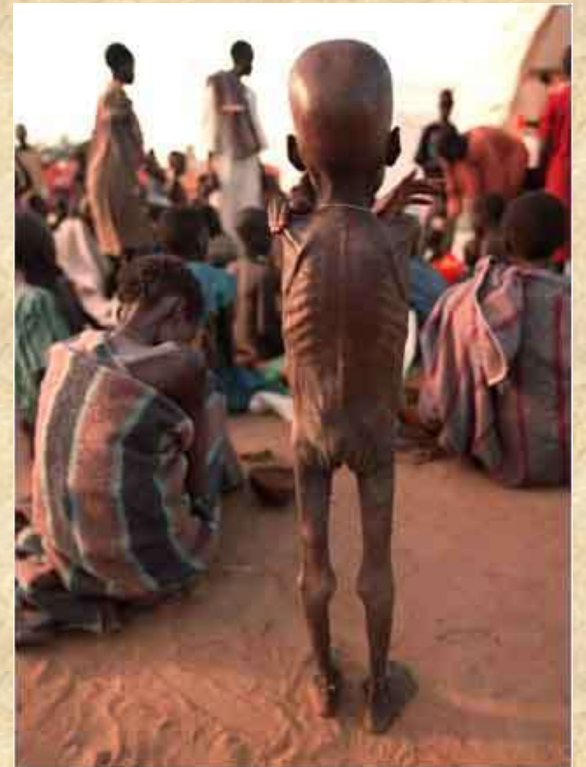


In Developing Countries

- **Malnutrition (mainly protein) especially among children and women**
- **Hunger and starvation not uncommon**
- **Limited availability of food**
- **High cost**
- **Most population depends on cereals**

According to the FAO, around 1 billion hungry people in the world in 2009

World Health Challenges



An Ideal Food Ingredient for the World

- High fibre
- Low fat
- High protein
- Low starch
- Low Glycemic Index (GI)
- Contain bioactive compounds (weight control, reduce cholesterol level, etc.)
- Low cost



Lupin meet all the above

Lupin

- A grain legume similar to soybean
- Grown in Australia, South America, USA, Europe, etc
- Costs less than half of the cost of soybean
- Can be grown under marginal conditions (less water, fertiliser and chemical requirement)
- Environmentally friendly – fixed nitrogen





Soybean

Lupin

Dehulled lupin

Lupin and Soybean – Flour Composition

Contents (%)	Lupin	Soybean
Protein	40	50
Fat	6	20
Minerals	3	5
Dietary fibre	30	5

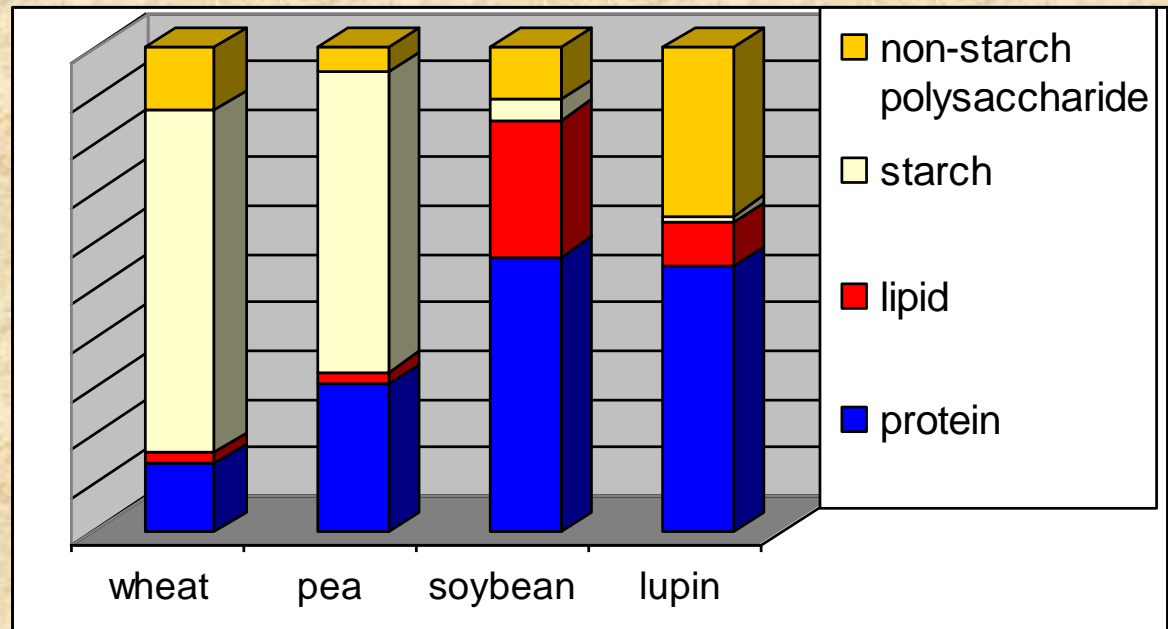
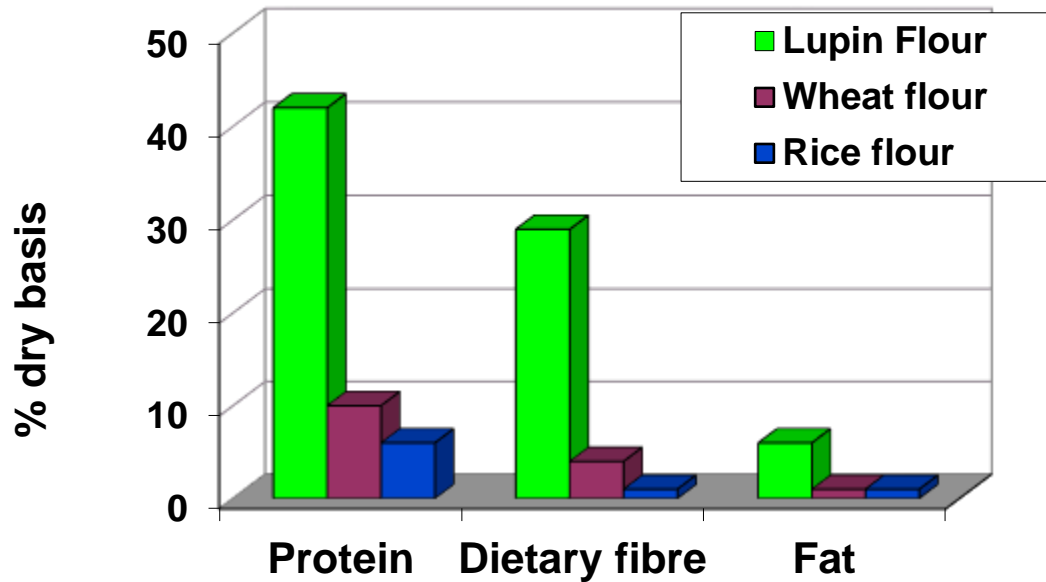
Composition of Lupin, Wheat and Rice Flours

Contents (g/100g)	Lupin flour	Wheat flour	Rice flour
Energy (kJ)	1074	1483	1527
Protein	40	10	6
Fat	6	1	1
Dietary Fibre	28	4	1
Starch	<1	72	80

Composition of Lupin, Wheat and Rice Flours

Contents (mg/100g)	Lupin flour	Wheat flour	Rice flour
Ca	86	21	7
K	970	162	148
Mg	172	34	52
P	310	130	211
Fe	4.1	2.1	0.2
Zn	2.1	0.5	1.1

Composition of Lupin, Wheat and Rice Flours



Lupin Foods- Health Benefits

- Reduces obesity
- Lowers cholesterol
- Reduces risk of cardiovascular diseases
- Improves bowel health
- Reduces risk of colon cancer
- Acts as a pre-biotic

“Let thy food be the medicine and thy medicine be thy food” - Hippocrates

High Satiety

Higher satiety foods help reduce obesity by reducing energy intake

Archer *et al.*, 2004 – clinical trial

Lupin kernel fibre patty more satiating (4.5 h) than the full-fat sausage patty and resulted lower energy intake

Lee *et al.*, 2006 – clinical trial

The lupin bread resulted in significantly higher self-reported satiety and lower energy intake

Cholesterol Lowering Effect

Arnoldi, 2008 – clinical trials

Lupin Proteins fed rats - significantly lower both plasma cholesterol and triglycerides

Hall *et al.*, 2005 - clinical trials

Lupin fibre diet reduced total cholesterol (4.5%), low-density lipoprotein cholesterol (5.4%)

Sirtori *et al.*, 2004 - animal trials

In rats - lupin protein extract reduced plasma total and VLDL+LDL cholesterol concentrations by 21 and 30%, respectively

Low Glycemic Index (GI)

Hall *et al.*, 2005 - clinical trials

Lupin flour addition to bread reduced the glycaemic index

- Lupin bread = 74
- Standard white bread = 100

Johnson *et al.* 2003 - clinical trials

A reduction of 18.8% was seen in IAUC (Incremental areas under curves) for insulin of lupin fibre containing bread compared with the control

Reducing Cardiovascular Disease Risk Factors

Sirtori et al (2004) - animal trial

In high cholesterol rats daily intake of 50 mg (for 2 weeks) of total lupin protein extract reduced plasma total and VLDL+LDL cholesterol concentrations by 21 and 30%, respectively

Martins et al (2005) – animal trial

L. angustifolius seeds reduced LDL-cholesterol in pigs fed a high cholesterol diet

Marchesi et al (2008) – animal trial

High cholesterol rabbits fed lupin protein supplemented diet for 3 months showed beneficial changes to cholesterol levels and development of thickening of the arteries that those fed milk protein

Bettzieche et al (2008) – animal trial

L. angustifolius protein reduced cholesterol levels in high cholesterol rats, presumably through down regulation of genes involved in lipid synthesis; however the effect was dependant on lupin variety

Pre-biotic Effect

Lupin is a rich source of raffinose family oligosaccharides (12 % on dry weight basis) which have proven pre-biotic effects

Martinez-Villaluenga et al., 2008

The numbers of faecal bifidobacteria in rats increased after oral administration of raffinose family oligosaccharides (RFOS) from lupin

We have Developed a Range of Lupin Based Healthy Foods

Lupin Based Snacks



Lupin Flour ~ 30%

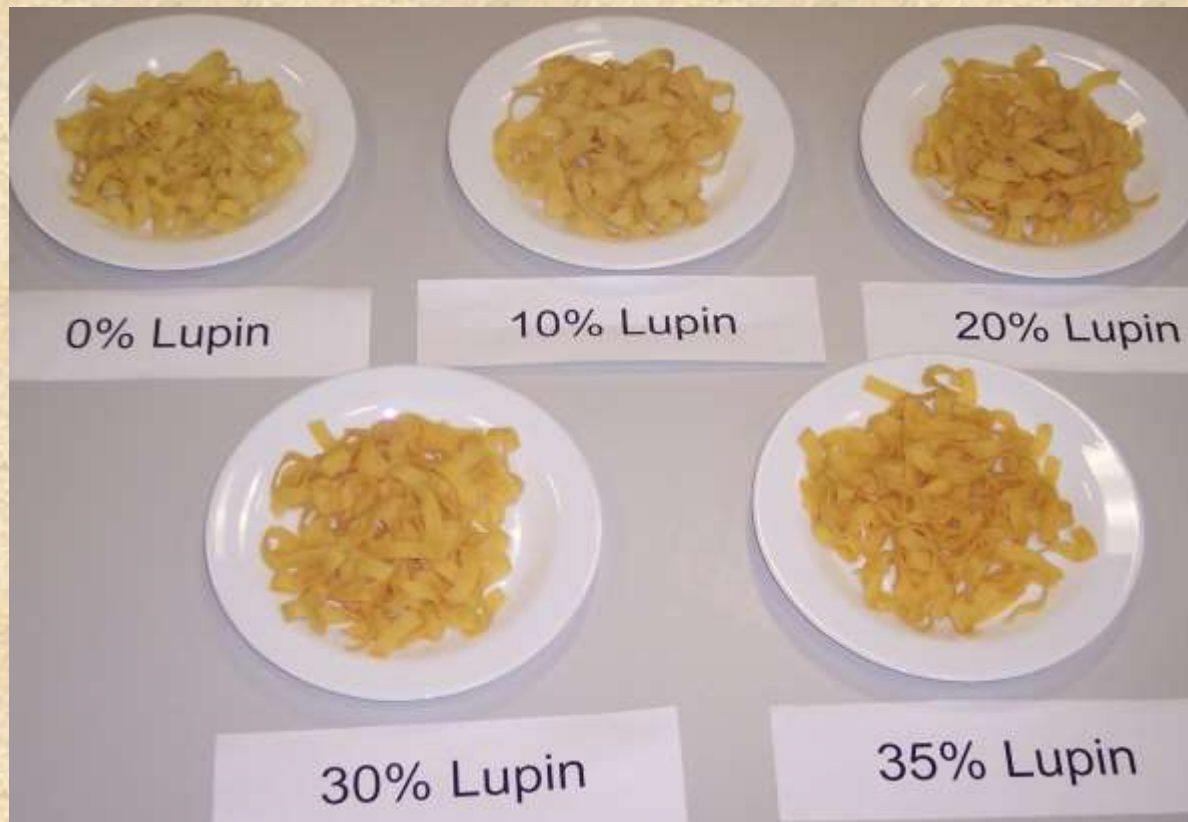


Lupin Based Snacks

Lupin flour ~70%



Lupin Based Pasta



Lupin Muffins



Lupin Noodles



Lupin Noodles (cooked)



Lupin Biscuits

20% lupin flour



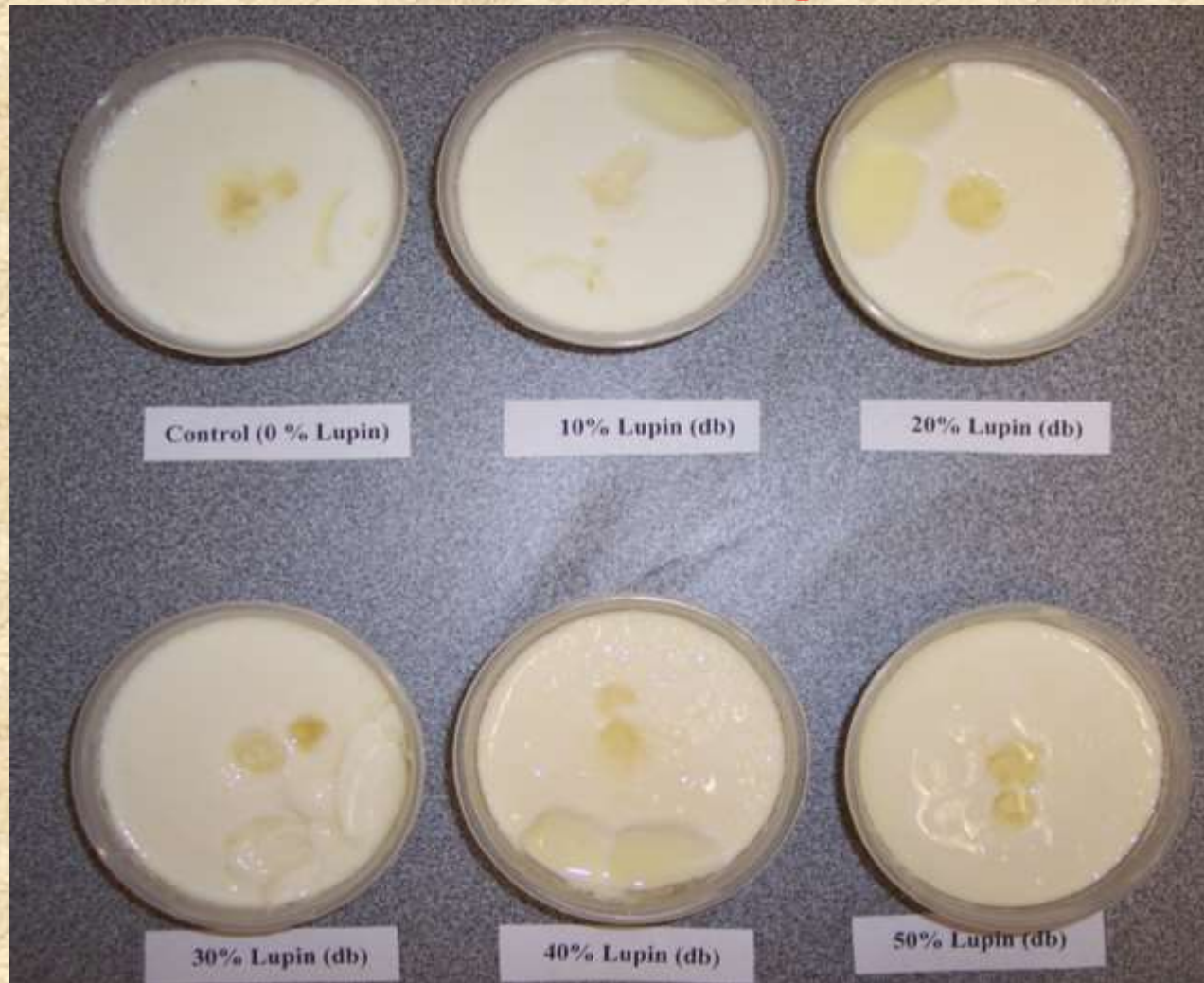
Lupin Chips (Crisps)

70% lupin flour



100 g = 70% of the daily dietary fibre requirement

Lupin Based Yoghurt



Lupin Burger

50% lupin flour



Lupin Chapatti



Innovation Display – Curtin Open Day

“Healthy Junk Foods”



Innovation Display – Curtin Open Day



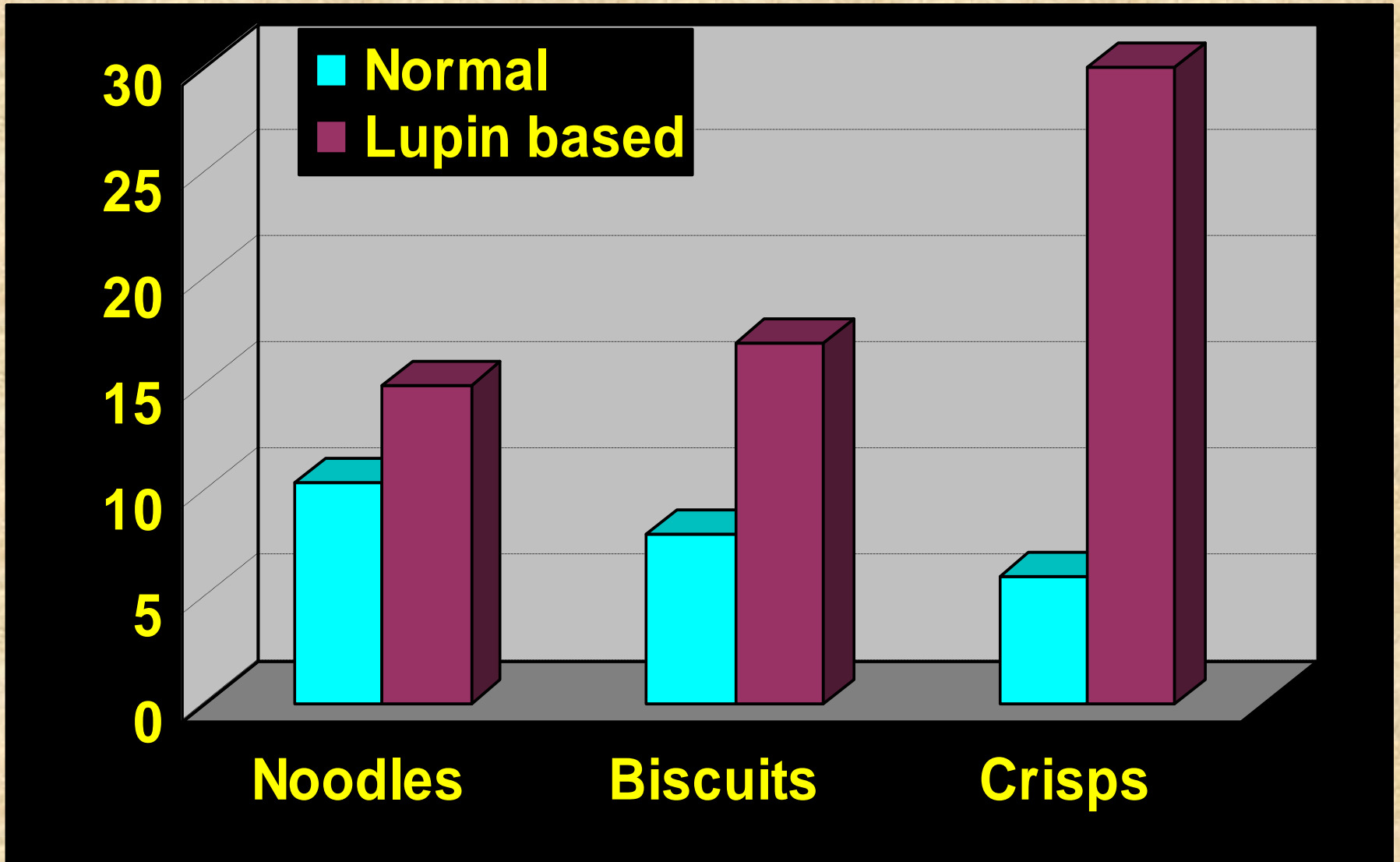
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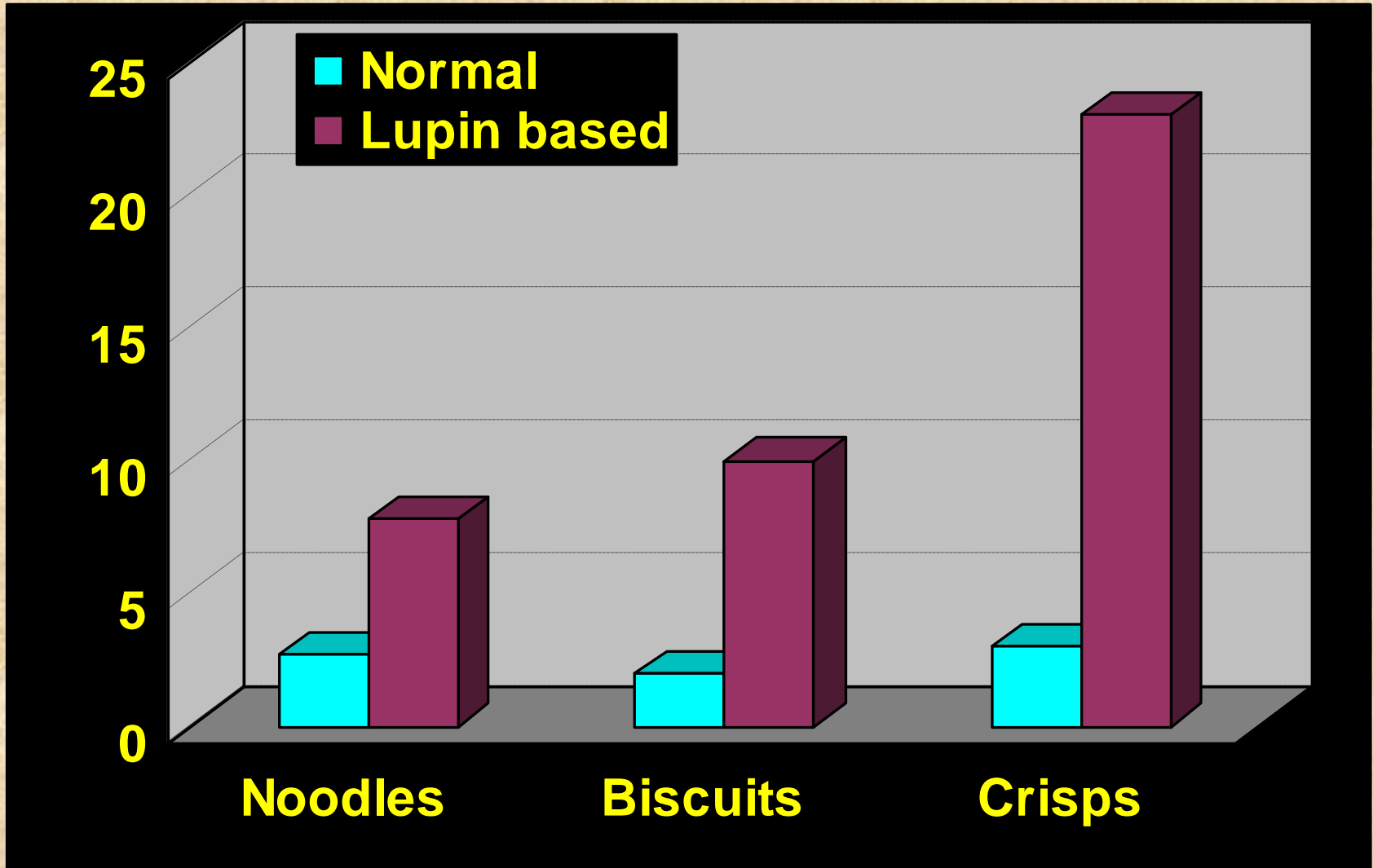
Lupin Chips



Protein (g/100g)



Dietary Fibre (g/100)



Lupin Tempe - Indonesia

- Funded by the Grain Foods CRC (GRDC)
- International patent has been granted
- Commercialisation is in progress



Lupin Tempe - Indonesia

- **Joint project with the Indonesian Institute of Sciences (LIPI)**
- **Officially launched by the Minister for Agriculture and Food, Hon Terry Redman in Jakarta in April 2010**



Major Lupin Producing Countries in the World

Country	Production (MT)
Australia	707,900
Poland	39,600
Chile	31,600
Russian Federation	21,800
Morocco	14,000
South Africa	13,300
Peru	8,400
Italy	4,500
Spain	4,300
Egypt	2,300
Ecuador	1,500
Lebanon	1,000

Lupin Consumption in Europe

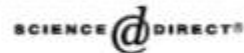
- **Around 15,000 tons/year lupin-based ingredients are sold in Europe for human food**

- **Around 500,000 tonnes/year foods containing lupin is consumed in Europe**
 - **Bread**
 - **Cookies**
 - **Snacks**
 - **Pasta**
 - **Beverages**
 - **Etc**

<http://www.foodnavigator.com/Science-Nutrition/Lupin-sector-defends-safety-of-its-ingredient>



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Food Chemistry 89 (2005) 341–345

Food
Chemistry

www.elsevier.com/locate/foodchem

Some chemical properties of white lupin seeds (*Lupinus albus* L.)

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Received 3 October 2003; received in revised form 25 February 2004; accepted 25 February 2004

Abstract

Lupin seeds (*Lupinus albus* L.), grown in Turkey, were investigated. Density of seeds were 1.16 g/cm³, 411.4 g, and 68.12 kg/100 l, respectively. The results of proximate composition were 32.2% protein, 16.2% fibre, 5.95% oil, and 5.82% sugar. Oil of seeds was composed of 31.1% polyunsaturated fatty acids. Sucrose constituted 71% of total sugar. Total thiamin, 2.3 mg/kg of riboflavin and 39 mg/kg of niacin. It can be concluded that lupin seeds have high nutritional value.

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Keywords: White lupin; *Lupinus albus* L.; Chemical composition



Available online at www.sciencedirect.com



Food Chemistry 102 (2007) 45–49

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Chemistry

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Fat and fatty acids of white lupin (*Lupinus albus* L.) in comparison to sesame (*Sesamum indicum* L.)

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Received 7 March 2005; received in revised form 23 March 2006; accepted 23 March 2006

Abstract

The study was undertaken to compare fat and fatty acid profiles in white lupin (*Lupinus albus* ssp. *albus*) and sesame (*Sesamum indicum* L.), representing two different families, Fabaceae and Pedaliaceae. Fat levels were 10.74% and 55.44% in seeds of white lupin and sesame, respectively. The results indicated that oleic, linolenic and arachidic acids in seed fat were higher in white lupin than in sesame cultivars. Oleic acid was the predominant fatty acid in white lupin, whereas linoleic acid was predominant in sesame. Fat content was statistically significantly correlated with linoleic, linolenic and arachidic acids at the genotypic level. The fatty acid composition of white lupin is useful for human consumption. Although oil content of white lupin was lower than that of sesame, white sweet lupin could be

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16-PAGE SUPPLEMENT
NATIONAL VARIETY TRIALS

Associate Professor Vijay Jayasena with a tray of freshly baked biscuits containing 20 per cent lupin flour.

PHOTO: BRAD COLLIE

Could lupins be the new global 'super food'?

WESTERN REGION



■ Lupins may finally be moving out from the shadow of more mainstream, and profitable, cereal crops as food technologists start serving up the first commercial lupin-based foods.

A range of lupin-based biscuits, pasta and 'crisps' has been developed and is in the process of being commercialised. Because of their high nutritional value the products are destined not only for the snackfood shelves, but also the higher-value health foods market.

Researchers at the School of Public Health

at Curtin University of Technology have developed the range of lupin-based foods to suit western and Asian tastes. The research has been funded through the Centre for Food and Genomic Medicine and the Grain Foods CRC (which is partly funded by the GRDC).

Project leader Associate Professor Vijay Jayasena says lupin-based foods have the potential to become 'super foods'. "They are high protein, high fibre, low fat, low GI and low carbohydrate foods that contain bioactive compounds, taste good and are low cost."

So far the Perth-based team, working with food manufacturers, has developed lupin-based tempeh (a popular fermented soybean product in South Asian countries),

pasta, instant noodles, biscuits and crisps.

To make the products appealing they have been given the guise of snack and convenience foods. The crisps, for example, have been an instant hit among test markets – crunchy, morish ... but with five times more protein and 10 times more dietary fibre than potato chips. Biscuits made from 80 per cent wheat flour and 20 per cent lupin flour contain 80 per cent more protein than wheat-only biscuits, and 150 per cent more dietary fibre – but far less carbohydrate.

Similarly, pasta and noodles containing 20 per cent lupin flour have double the amount of protein and three times more dietary fibre.

At the recent GRDC-sponsored International Lupin Conference in Perth, Dr Mark

Sweetingham, the manager of legumes and grain food research with the Department of Agriculture and Food, Western Australia (DAFWA), said there was growing interest in lupins because of the functional food and nutraceutical opportunities that may flow from their unique protein and fibre profiles.

Sofia Sipsas, also from DAFWA, told the conference lupins could be sold to the food market as flour (kernel flour), bean sprouts, hulls, kernels, protein concentrates, protein isolates and kernel fibre, with end-uses as diverse as protein for milk and ice-cream, and extracts used in cosmetics.



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High protein: Vijay Jayasena shows off snacks he has created from lupins.

Picture: Astrid Witek

Lupins promise perfect junk food

MICHAEL HOPKIN

Talk about flower power — lupins are being hailed by WA scientists as the magic ingredient set to usher in an era of "healthy" junk food.

Curtin University researcher Vijay Jayasena has created snacks from lupin seeds which contain four times the protein and 10 times the fibre of regular potato chips, and says the seeds could be the next "superfood".

The snacks, made from ground lupin-seed "flour" fried in vegetable oil, could help parents give their children the treats they want without harming their health or

denting the weekly budget. The snacks could be given flavours just like regular potato chips, Associate Professor Jayasena said.

The list doesn't stop at chips — the Curtin team has also created recipes for cookies, cakes and Indonesian tempeh.

The food industry had been slow to recognise the health benefits of lupins, he said. Typically, they were used only for expensive, specialist products such as gluten-free pasta, which can cost \$20 a kg.

WA, which grows 80 per cent of the world's lupins, was poised for a boom, Professor Jayasena said.

The crop could be grown with less water and fertiliser than many traditional crops. Farmers grow lupins only as a rotational crop. But a boom in demand could see farmers planting the flowers as a cash investment.

The first lupin treats are set to hit supermarket shelves within three weeks, when Fremantle's Bodhi's Bakehouse launches a line of lupin-based choc-chip cookies.

Owner Arman Ghodrati said the high-protein cookies gave a full feeling and were lower in sugar than normal biscuits.

"Who wouldn't like a chocolate biscuit that's healthy?"

Merriwa family deny obstructing police at bar

MICHAEL BENNETT

A Merriwa family of four accused of injuring and obstructing police on Friday night have pleaded not guilty to all charges in Perth Magistrate's Court.

Mrs Hamilton was arrested on charges of disorderly conduct and refusing to leave the scene after being issued a move-on notice.

After the incident, one officer was treated for a back injury, another for a broken finger, while a third officer

WA News

Text Size



Weight-loss bread a first for WA baker

31st July 2007, 6:15 WST

A new high-protein, low-carbohydrate bread baked in Perth is being dubbed the choice of slimmers because of its ability to keep people full for longer, helping them eat less and potentially lose weight.

Made from lupins, a legume, the bread has been found by a University of WA study to help people consume up to 30 per cent less energy during a meal.

One study participant recorded weight loss of about 4kg over four weeks.

Called Slimmer's Choice, the bread was developed by Fremantle bakery Bodhi's Bakehouse, in conjunction with research

Lupin bread takes the cake in uni study of weight losers



Flab busters: It is high in fibre and protein but low in carbohydrates and a university study found this lupin bread baked by John Noonan, left, and Keith Jarvis helped produce dramatic weight losses. **Report, P11** Picture: Barry Baker

WA's researchers tackling 'diabetes'



Associate Professor Vijay Jayasena and Bodhi's Bakehouse Alpar Myers with choc-chip lupin biscuits.

Researchers from the Centre for Food and Genomic Medicine (CFGM) are making great strides in the fight against 'diabetes' with the development of healthier alternatives to wheat-based foods.

The twin epidemics of diabetes and obesity, known as 'diabetes', are of growing concern in Western Australia and the world. Currently, more than 140,000 Western Australians are affected by diabetes and over 15 per cent of adults are classified as obese.

Research at CFGM has shown that flour produced from lupin kernels, as opposed to wheat, is higher in protein and fibre, with very few carbohydrates. Its low fat content and glycaemic index (GI) helps to reduce overall energy intake and appetite.

Stimmer's choice, a lupin-based bread developed by CFGM, has proven to be successful in helping people reduce meal sizes as a means for weight control, therefore driving the researchers at the centre to expand their product range.

In April, Fremantle's Bodhi's Bakehouse released a new low fat and sugar, high protein and fibre choc-chip lupin biscuit, based on the one developed by CFGM.

CFGM researcher, Associate Professor Vijay Jayasena of Food Science and Technology at Curtin University of Technology, said the lupin enriched biscuits had twice the protein and four times the fibre of similar products.

"We already know lupin flour foods can help people feel fuller for longer and curb calorie intake thanks to the legume's high protein and fibre content, so with the help of manufacturers such as Bodhi's Bakehouse we're creating a line of foods that offer lupin benefits, and choc-chip biscuits are the latest addition," he said.

CFGM Director Professor Peter Leedman said lupin-based foods were an exciting WA-made prospect that could help alleviate a global problem.

"It seems lupin foods have global potential which would not only lend possible health benefits to the State, but fantastic economic results as well, with WA at the head of the pack."

The Centre for Food and Genomic Medicine, based at the Western Australian Institute for Medical Research, was established through a three year State Government investment of \$4.5 million, managed by the Department of Commerce.

Nominations open for WA Industry and Export Awards

Nominations for the State's most prestigious business awards are now open.

The Western Australian Industry and Export Awards acknowledge the innovation, hard work and success of businesses, large and small, in reaching new markets.

Premier Colin Barnett said WA has a long history of producing successful businesses that achieve exceptional outcomes of home and overseas.

"The world is experiencing an economic slowdown that is having major repercussions for businesses globally. These awards provide us with the opportunity to focus on the positive achievements, determination and hard work undertaken by WA businesses during these difficult times," Premier Barnett said.

"I encourage all businesses to look back on your achievements and nominate yourselves in this year's awards."

The WA Industry and Export Awards, now in their 21st year, feature 14 industry and export categories as well as the Premier's Award for Excellence.

All State export category winners automatically progress as finalists in the Australian Export Awards to be held in November.

The 2009 awards, administered by the Department of Commerce, are sponsored by Austrade, Austrasia and New Zealand Banking Group, Craig Mostyn Group, Export Finance and Insurance Corporation, Fremantle Ports, Rio Tinto and The West Australian newspaper.

Nominations close on Wednesday 15 July. For more information contact June Phillips on 9263 9278, email industryexportawards@commerce.wa.gov.au or to download an entry form, visit www.commerce.wa.gov.au/industryexportawards



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Tempe market a boost for WA lupin industry

07 Jun, 2010 01:11 PM



The use of lupins to produce the food product 'tempe' in Indonesia is expected to significantly boost the Western Australian lupin industry through increased demand and higher prices to growers.

The new market will benefit WA growers who produce about 80 per cent of the world's lupin crop, with researchers predicting demand for WA lupins for tempe production could rise to as much as 200,000 tonnes within a few years.

The Grains Research and Development Corporation (GRDC) has supported research leading to developing lupins as a partial substitute for soybeans in the production of tempe.

Tempe is one of the most commonly consumed foods in Indonesia and lupins are a cheaper yet nutritionally superior grain compared with soybeans.

Lupin tempe was officially launched in Jakarta by the WA Minister for Agriculture Terry Redman in April and the product is expected to become commercially available in Indonesia in coming months.

Lupin tempe has been developed as a result of a joint project led by Vijay Jayasena, of the School of Public Health, Curtin University, conducted in collaboration with Leonardus Kardono of the Indonesian Institute of Sciences-LIPI.

The research is funded by the GRDC-supported GrainFood Cooperative Research Centre (CRC). The CRC is actively working with tempe manufacturers in Indonesia to commercialise the process for making tempe from lupin.

Professor Jayasena said he expects initial demand for WA lupins for tempe production in the coming year will be about 50,000 tonnes.

Current WA lupin production is less than 1 million tonnes and supplies predominantly the stock feed industry.

"Lupins are currently grown in WA mainly for their rotational benefits and are largely a break-even crop," Professor Jayasena said.

"But increased demand for lupins through this new market could help to increase



WA Minister for Agriculture and Food Terry Redman is served a dish featuring lupin tempe at the Jakarta launch of the product.

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Tempe made from lupins

Article from: **WEEKLYTIMES**

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Peter Hemphill
June 10, 2010

WEST Australian researchers have developed an Asian fermented food product called tempe from lupins.

This displaces its traditional base ingredient of soyabeans

The breakthrough, after more than four years of research at Curtin University in Western Australia, should see lupins elevated from being a traditional stockfeed-type grain to a food-quality product.

Tempe, which looks similar to tofu, originated from Indonesia but is also popular in Malaysia, Thailand and other South East Asian countries.

The lupin tempe was developed by a team led by Curtin University's Vijay Jayasena, with collaboration from Indonesian scientists.

It was supported by the [Grain Foods Co-operative Research Centre](#) in Sydney and the [Grains Research and Development Corporation](#).

The new tempe was made from a 50:50 mix of dehulled lupins and soyabeans.

Prof Jayasena said he hoped the research team would have a tempe made totally from lupins within 12 months.

He said the current stumbling block in achieving that goal was finding an appropriate inoculant with a micro-organism to ferment the lupin.

Dehulled lupins are cheaper but more nutritional than soyabeans.

Prof Jayasena said lupins were high in protein and distasteful to



Feed to food: tempe made from lupins will soon be served on the plates of Indonesian consumers thanks to a West Australian breakthrough.

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Lupin Based Healthy Foods

- A number of large national and international food companies, including the largest chip manufacturer in the world, have expressed their interest
- Some foods are commercially available (bread, pasta, biscuits)



Lupin Research Collaborations – National

- Centre for Food and Genomic Medicine
- Grain Foods CRC
- University of Western Australia
- University of Western Sydney
- Department of Agriculture and Food
- Midwest Development Commission
- Murdoch University
- Corporate Bulk Handling (CBH)
- Bodhi's Bakery

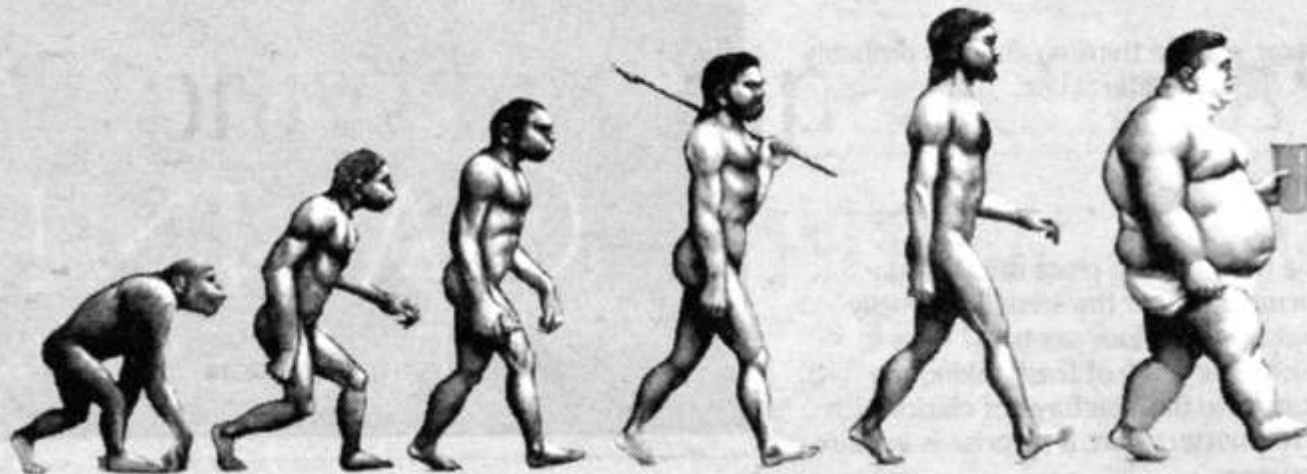


Lupin Research Collaborations – International

- **Indonesia: Indonesian Institute of Sciences (LIPI)**
- **India**
- **Thailand**
- **Sri Lanka**
- **Malaysia**
- **USA**

Where we are and where we will be ?

"EVOLUTION"
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Applicazioni
Informazioni

Grazie al **LUPIDOR®** è possibile ottimizzare i processi economici nella produzione di alimenti e aumentare le caratteristiche nascoste del Lupino, le quali, grazie ai recenti studi dei progetti di ricerca della comunità europea, stanno mettendo in evidenza gli effetti salutarissimi per l'alimentazione umana.



SENZA GLUTINE - GLUTEN FREE

Le sue eccellenti capacità come agente emulsionante, il suo colore dorato e i suoi delicati sapori ed aromi permettono la preparazione di alimenti adatti ai celiaci.



Shasta Foods

ShastaFarms®

WELCOME HISTORY ABOUT US PHOTOS **LOPINO®** PRODUCTS



Lopino®

sweet-lupin fresh-protein

Lopino® is a fresh protein derived through a patented process from the sweet lupin. It has a yellow appearance and a neutral to slightly nutty taste.

The production of **Lopino®** makes no use of any **coagulating agent**. The protein coagulation (protein precipitation) occurs solely through heat.

The **ingredients** for making **Lopino®**: water, sweet lupin beans

Benefits

- o contains all essential amino acids
- o has large amounts of unsaturated and multiple unsaturated fatty acids
- o has a high amount of lysine, more than found in most grains
- o unsurpassed degree of digestion at 98%
- o high-quality protein (20% versus 9% for soy tofu)
- o cholesterol free, gluten free, yeast free
- o Non-GMO
- o low GI and low GL

Applications

Nutrition Facts	
Serving Size 50 grams (50g)	
Servings Per Container 4	
Amount Per Serving	
Calories 90	Calories from Fat 35
% Daily Value*	
Total Fat 4g	8%
Saturated Fat 0g	0%
Polyunsaturated Fat 0g	
Monounsaturated Fat 0g	
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 5mg	0%
Potassium 20mg	1%
Total Carbohydrate <1g	0%
Dietary Fiber 2g	0%
Soluble Fiber	
Sugars	
Protein 10g	20%
Vitamin A	
Vitamin C	
Calcium	2%
Iron	10%
Phosphorus	0%
Magnesium	4%



NO DIET REQUIRED,
CONTROL SNACK ATTACKS.

- Information
- Success Stories
- Contact Us
- Stockists

“ I would recommend this to anyone who struggles with over eating ” [read more +](#)



WHAT IS LUPIN8?

Lupin8 is a total weight control / lifestyle product that is used in everyday cooking and diet regimes.

All the products contained within Lupin8 come from nature.

Lupin8s ingredients are not made in a laboratory but are a mixture of grains from natures basket. We have combined the



LUP' ingredients

vegetal & natural


Advanced search 

- Do you know the lupin ?
- Production/Sourcing/Quality
- LUP'INGREDIENTS range
- News / Innovations
- Salted products
- Sweet products
- Pastry base*
- Biscuits*
- Sweet Breads & buns*
- Dry fruits & chocolate preparations*
- Others*
- Nutritional benefits
- Technical data/Samples
- Contact

Sweet products

[list of applications](#)



Pastry base : Pie crust, yellow cakes, pancakes and waffles, brownies, cakes, crumbles, sponge cakes...



Biscuits: Biscuits, wafers, speculoos...



Sweet Breads and buns : Breakfast goods, Danish pastry, brioches, croissants, etc.

Over 500,000 tonnes of food consumed annually in Europe contains lupins (Fletcher, 2006)

Maxiput ingredients in pasta products.

Pasta and noodles are traditionally prepared by mixing whole egg, egg yolk or even gluten proteins for binding and structure forming purposes.

Maxiput ingredients (from flour) as well as certain (unmodified) can replace egg proteins to paste and noodle formulation perfectly as well as totally.

As an indication, egg constituents will be reduced according to its dry matter composition (i.e. egg white protein is 13 of egg while dry matter the flour protein, and egg yolk for 33.2 of egg yolk dry matter) by weight of whole egg will be substituted together with added water and fraction of the appropriate type, i.e. non-structural fibres, which are an integral part of the Maxiput flour as well as of the protein concentrate (from flour) and as a hydrocolloid (Xanthan Gum) and also at the same time as a water concentration up to a certain amount.

In gluten free pasta formulation, Maxiput (Gluten Free protein base) has proved to be a substituted ingredient for superior quality products.

AVELOP

PRODUCTOS NUTRITIVOS

VITAFIBER

Fibra natural dietética - Suplemento dietético de fibra

UNIDAD: 250 g., 300 g., y 500 g.

ENVASE: Polipropileno transparente Dos-Pack

...Como fibra y otro componente con VITAFIBER!!!

Nutrientes Principales: Fibra soluble 75g., Fibra soluble 4 g., Carbohidrato 17g., - en Calorías

Breadings

PRODUCTS

Products by: Brown, Golden, & Toasted

An Ancient Crop

For thousands of years, we have known lupines as useful plants for humans and animals. Like most Legume belongs to the family of leguminosae. It is cultivated mainly in South America, Australia and in Europe. It is widely recognized from this plant is being introduced in Europe worldwide. Up to the 19th century, Lupines were very common in the Mediterranean countries. Nowadays, Lupines are still used in Portugal, Spain and France. Many research projects aim at increasing cultivating the Lupin as protein source and as a functional food.

The Lupin products are manufactured from genuine estate Lupinus Luteus (yellow lupine) only, which are free from pesticides and other chemical additives. The substitution of lupine flour for the development of products with increasing characteristics and the substitution of lupine substitution of lupine to the substitution of soy products.

PortugueseFood.com

Lupini Beans

Price: \$9.25

Lupin Loaf - Code 1600

Wheat, Rice Flour, Lupin Flour (10%), Milled Rice Seed (Lusinate), Evening Primrose Seed, Olive Oil, Vegetable Gums (Guar Gum and Calfskin Gum), Salt, Baking Agents (S02, S75), Psyllium, Talcum.

up' ingredients

ORGANIC Jaffa

diet

curios

Accord to highest class

The Golden Legend Pancake Flavour

Pancake Flavour

Ingredients ...

Matillion Info (Awards) ...

Lupin8

No Diet Required, Control Snack Attacks

What is Lupin? ...

Recipe Finder

Stockist Locator

LUP ingredients

vegetal y natural

Sweet products

... (Australia's Leading Gluten Free Shop - Nationwide Delivery)

LUPIN FLOUR

IRWIN VALLEY

HOME | IRWIN VALLEY | LUPIN FLOUR | LUPIN RECIPES | CONTACTS & SALES

... (Product by quality assured growers from start to finish, Irwin Valley's Lupin Flour benefits excellent dietary benefits and nutritional qualities that make it an ideal ingredient for the health conscious and those with special dietary requirements.)

psylloVite

Mean Composition per 100 g of product:

Energy value (1994 kJ)	340 kcal
Protein (Crude, 25)	5.0 g
Carbohydrates (p.a.)	79.8 g
Fats	0.8 g
of which saturated	0.4 g
Dietary fibre	2.4 g
Sodium	35 mg

Recall: 500 gr, Lingine 500 gr, Spaghetti 500 gr

GlutenFree

... (Australia's Leading Gluten Free Shop - Nationwide Delivery)

ITEM CODE	DESCRIPTION	PRICE
134	Gluten Free Flour	\$9.25
135	Gluten Free Flour	\$9.25
136	Gluten Free Flour	\$9.25

Lupin Flour

... (Product by quality assured growers from start to finish, Irwin Valley's Lupin Flour benefits excellent dietary benefits and nutritional qualities that make it an ideal ingredient for the health conscious and those with special dietary requirements.)

Die neue vegetarische ESS-KLASSE von multikost

... (Klicken Sie bitte die einzelnen Produkte an und Sie erhalten die einzelnen Prospekte im PDF-Format.)

upina

... (Australia's Leading Gluten Free Shop - Nationwide Delivery)

GLUTAN

... (Australia's Leading Gluten Free Shop - Nationwide Delivery)

Der Chefkoch empfiehlt: Wir über uns Kontakt Produktübersicht

... (Fa. I.I.FRANK Fa. W. EDENDORP)

Chile

Lupin Production Trends 1976-2006

