

Horticulture Innovation Australia

Final Report

Research and Education of health professionals relating to the health benefits of almond consumption

Almond Board of Australia (ABA)
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Project Number: AL12001

AL12001

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Summary

Project AL12001 – Nutrition Research and Education of health professionals relating to the health benefits of almonds – commenced in March 2013 and concluded in June 2016. During this period, Australian Almonds participated in 22 major health professional conferences and personally engaged more than 22,000 health professionals.

This program has played a key role within the Australian almond industry's strategic growth plan which is vital as the industry has grown from 49,585 tonnes in 2012 to a forecast crop of 80,140 tonnes in 2016. This is a 62% increase. In 2015, Australian Almonds gross value of production was more than 10% of Australian horticulture's GVP and the industry is undergoing a further period of orchard expansion.

The over-arching objective of AL12001 is to position Australian almonds in the mind of key health influencers as a 'nutritional solution' that they want to share with their patients and clients. Health professionals working in the nutrition space need to provide practical solutions to the needs of their patients and clients not just diagnoses of their problems. A key objective of the Australian Almonds Nutrition Research and Education of health professionals is to provide the scientific evidence that almonds play an important role in a healthy daily diet.

The many thousands of health professionals engaged throughout AL12001 who have requested our educational packs to personally give to their patients and clients highlight that this key objective is being achieved. However, as the Australian food environment is constantly barraged with new 'fads', the Australian almond industry needs to remain resolute and committed to growing the science-based nutritional profile of almonds.

Keywords

Human Nutrition, Market Development, Consumer Education

Introduction

Health and nutrition provides a key driver of future growth for the Australian almond industry. It is a strategic pillar in the Australian almond industry's long term plan to manage its next 10 years of development.

The three years of work within the project AL12001 needs to be placed in this context of long term industry development. This project has delivered tangible outputs and outcomes during its term but more importantly has set up significant growth outcomes for the next five years and beyond.

Over the past 10 years, the Australian almond industry has matured into one of Australia's most significant horticultural industries. As a leader in Australian horticulture, the Australian almond industry needs to have a clear 'voice' that articulates the nutritional importance of almonds to Australians. For our 'voice' to be effective, it needs to be validated and amplified by key independent health professionals who become 'advocates' for the healthy Australian almond message.

This key outcome of health professional advocacy is clearly witnessed in the on-going requests for our client handouts and educational packs by doctors, dietitians, diabetes educators and fitness trainers to personally give to their patients and clients. These requests and subsequent advocacy are driven through the relationships formed at the many health professional conferences we attend each year and by the credibility of participating in these conferences over a number of years.

Persistent and consistent effort over multiple years builds credibility which in turn grows confidence that our message is worth advocating. This is because our message offers value to the patients and clients of the health professionals we encounter.

Health and nutrition are widely understood across the Australian food industry as key growth drivers. This has resulted in this 'space' becoming highly contested by almost every type of food. Claims of 'health' and 'healthy' are shared by food and beverage brands across a wide spectrum of scientific evidence and nutritional validity. The use of terms such as 'natural' are leveraged to invoke a 'health' message when in fact it merely speaks of not using artificial colours and flavours. These food products are not nutritionally healthy but still seek to be positioned within this 'space'.

Evidence of the advocacy of Australian almonds by health professionals can be seen in the on-going use of our educational packs by sports dietitians who recommend almonds as a high-protein wholefood for post-training/post-game recovery for sports athletes.

Health and nutrition is a space contested by an eclectic mix of people jostling for a position of authority and influence. This mix includes cooks, fitness trainers as well as scientifically trained dietitians and nutritionists. For example, the anti-sugar and now nut-cautious authority in David Gallispie is a lawyer.

It is very important that the Australian almond industry is able to rely on our key health professional audience of trained dietitians and nutritionists to advocate honestly and independently on the nutritional value of almonds.

Methodology

The methodology of AL12001 – Nutrition research and education of health professionals relating to the health benefits of almond consumption – grew out of the Australian almond industry's strategic plan which identified 'health and nutrition' as a key contributor to growing the Australian almond industry.

The overall methodology of the program is an 'Influence the Influencer' strategy of communicating with targeted health professional audiences.

The 2013 to 2016 Australian almond nutrition program identified four key health professional audiences:

- General Practice doctors and nurses
- Dietitians
- Fitness Professionals
- Diabetes Educators.

Within the dietitians' audience, the project extended beyond the Australian profession to communicate with dietitians in New Zealand and in Indonesia. Both of these countries are important to the growth of the Australian almond industry.

The key messages that formed the basis of the project's health professional education program were:

- Healthy after-school snacking
- Sports recovery and fitness
- Healthy weight management
- Heart health and diabetes management.

These health messages are framed to meet the needs of the key patient and client segments of the health professionals targeted by our nutrition education program:

AL12001 Message & Patient Matrix		Health Professional Segmentation			
Messages	Patient & Client Profile	GPs	Dietitians	Fitness Prof	Diabetes Ed
Healthy After-School Snacking	Children: 10 yrs + Men & Women: 30yrs+		✓	✓	
Sports Recovery & Fitness	Active Men & Women: 15yrs+		✓	✓	
Healthy Weight Management	Diet-Aware Men & Women: 25 yrs+	✓	✓	✓	✓
Heart Health & Diabetes Mgt	Men & Women: 40 yrs+	✓	✓		✓

Healthy After-School Snacking is an important health message for the Australian almond industry as it provides an on-going endorsement to Australian children to regularly eat almonds when they may not be allowed to eat them at school. The key health professionals targeted to become advocates for this message are dietitians and fitness professionals. The members of both of these professional segments are very interested in healthy snacking and recommend solutions to their clients and for their clients' families. They make these recommendations in their one-on-one consultations and also via their media platforms (traditional and social media).

Almonds' nutritional profile of being high in protein, fibre and healthy monounsaturated fat means that it is an excellent wholefood for sports recovery. Sports dietitians have led the advocacy on this message with some of Australia's elite sporting teams including the AFL, Netball and Australian Institute of Sport hockey teams. Healthy snacking for efficient physical recovery after training in particular and for the energy to improve fitness in general are also key issues for gym and fitness professionals.

The nutritional messages of healthy weight, heart health and diabetes management are linked as the three most important lifestyle health issues facing our Australian population.

The Australian Heart Foundation's 2014 Statistics Report confirmed that Cardiovascular Disease (CVD) is the single largest killer of Australians and is the most expensive disease treated nationally, accounting for 11% of direct healthcare expenditure. It should be noted that there is no nationally funded action plan to drive improvement in prevention, early detection and management of CVD.

While the mortality rates of CVD in Australia have declined over the past twenty years, there is a real risk that this decline could be reversed due to the significant increase in overweight and obesity rates.

Improving heart health can both help Australians live longer, healthier lives and ease the pressure on our hospitals and health care budgets.

Unlike CVD, rates of diabetes in Australia have been rising significantly. Diabetes Australia describes it as the epidemic of the 21st century.

1.7 million Australians have diabetes with more than 100,000 Australians developing it in the past year. The total cost impact of diabetes in Australia is estimated at \$14.6 billion.

Type 2 Diabetes accounts for 85% of all diabetes and is significantly linked to lifestyle choices.

While diabetes can be managed, its potential complications include heart attack, stroke, kidney disease, limb amputation and depression.

The latest science indicates that 58% of Type 2 diabetes can be prevented. The key prevention strategies include:

- Maintaining a healthy weight
- Regular physical activity
- Making healthy food choices
- Managing blood pressure
- Managing cholesterol levels
- Not smoking.

The clear conclusion is that a healthy lifestyle can prevent 58% of Type 2 diabetes and healthy eating can help reduce risks.

The very high importance of addressing these lifestyle health issues of heart health and managing diabetes is a significant focus for three of the health professions targeted by AL12001: General Practice doctors and nurses, dietitians, and diabetes educators. The inter-linked issue of healthy weight is a major concern for all four health professional audiences.

The Australian almond industry is also deeply interested in understanding the nutritional role of almonds in addressing the issues of heart health and diabetes within Asia.

In terms of heart health, it would appear that the prevalence of heart failure is higher in Southeast Asian countries when compared to the rest of the world.

The whole Asian region is undergoing a rapid rise in urbanisation, industrialisation and major technological and lifestyle changes.

With these lifestyle changes come a rise in the lifestyle health issues of heart disease and diabetes in particular.

From a diabetes perspective, studies have shown that Asians are at a higher risk of developing Type 2 diabetes than people of European ancestry. Asians would appear to be more likely to develop the disease even at a lower BMI. Overall Asian populations have a disproportionately high percentage of people with diabetes.

The early discussions with the Indonesian Dietetics Association confirm that the growing incidence of diabetes and rising rates of CVD are being viewed as significant public health issues. Healthy eating is also regarded as a key long term strategy. Australian almonds has the opportunity to add value within this context.

During the project's term, a range of educational methodologies have been utilised:

- Personal interactions at major health professional conferences
- Mail outs of requested educational materials and client handouts
- E-newsletters.

Over the term of AL12001, it was decided to begin the development of a digital nutritional learning center for our health professional audiences. The first segment to be targeted is fitness professionals. This online learning center replaces the initial plan for an Australian Almond Nutrition Council.

The key components of AL12001 were to:

- Identify and highlight research studies relevant to key health issues: particularly in relation to healthy snacking, sport recovery and fitness, healthy weight, heart health and diabetes prevention and management;
- Communicate and educate the targeted health professionals and to encourage them to share these insights with their clients
- Provide for 'technology transfer' of the program's resources with all stakeholders in the Australian almond industry.

Outputs

There are five major output categories:

1. Nutritional research and educational resources
2. Supporting major clinical nutritional research projects on almonds
3. Health professional engagement and education
4. Partnerships with Dietitians Association of Australia and Sports Dietitians Australia
5. Developing a digital nutrition learning center for health professionals

1. Nutritional research and educational resources:

Over the course of the AL12001 program, Dr. Sara Grafenauer, an Accredited Practicing Dietitian, led the development of a range of education resources and fact sheets relating to almonds and published nutritional research from around the world. These resources were also developed with contributions from Sports Dietitians Australia and the Dietitians Association of Australia.

The three key fact sheets used at the range of health professional conferences attended over the course of AL12001 were "Almonds – the Healthy Handful", "Almonds: the Perfect After-School Snack" and "Almonds and Sports Recovery".

The "Healthy Handful" fact sheet developed in consultation with the Dietitians Association of Australia highlighted the key health benefits of eating a handful of almonds including its heart health benefits, lowering LDL cholesterol, helping minimize the risk of Type 2 diabetes and its key nutritional characteristics of being high in healthy monounsaturated fat and Vitamin E.

The "Perfect After-School Snack" fact sheet developed by Dr Sara Grafenauer highlights the importance of nutritionally-smart snacking for children. While nuts may not be allowed in some schools, most families are nut allergy free and so almonds are an ideal snack for children after school. This fact sheet details the role of a handful of almonds in helping children refuel after a day of learning and play.

The "Almonds and Sports Recovery" fact sheet developed and updated by Sports Dietitians Australia highlighted the value of almonds as a source of protein, fibre and healthy fats for physical recovery after sport or fitness training.

A/: Nutritional Research Findings:

The nutritional educational resources developed during AL12001 included summaries of the large number of research studies published around the world. Some of the most significant of these studies which have been communicated to the health professionals engaged during the AL12001 project are:

(i) Almonds have 20% less calories than published on pack:

Novotney, J.A., S.K, Gebauer, and D.J.Baer: Discrepancy between the Atwater factor predicted and empirically measured energy values for almonds in human diets. Published in The American Journal of Clinical Nutrition, 2013

This study conducted by the USDA found that a significant amount of the energy in almonds pass straight through the body without being taken up by it. This means that the calories reported on pack which uses a model (the Atwater factor) are 20% higher than the calories actually taken in. This is important for health professionals to understand when they are recommending almonds as part of a healthy daily diet.

(ii) Almonds and healthy snacking:

The core theme of six new nutritional studies was understanding how eating almonds as a healthy snack can help weight loss and improve heart health. These studies highlighted the effects of almond consumption on overall diet quality and health status, abdominal adiposity (belly fat), measures of appetite and satiety, and cardiovascular risk factors. The six research projects were presented at the American Society of Nutrition (ASN)'s Scientific Sessions and Annual Meeting, held in conjunction with Experimental Biology 2014 (EB). The conference attracts an international audience of approximately 13,000 leading scientists specialising in various health disciplines.

Dr. Carol O'Neil of Louisiana State University presented a new analysis of 24,808 adults 19 and older, using National Health and Nutrition Examination Survey data from 2000-2010 showing that almond consumers had increased nutrient intake, improved overall dietary quality and better physiological status compared with non-almond consumers (1).

This was a cross-sectional study; therefore, the data cannot be used to draw causal relationships, but suggests an association between almond consumption and positive health status. Many commonly consumed snack foods are nutrient-poor and elicit weak dietary compensation.

Dr. Richard Mattes from Purdue University examined the effects of snacking on nutrient-rich almonds in 137 adult participants at risk for Type II diabetes (2). Consuming 1.5 ounces of dry-roasted, lightly salted almonds daily helped curb participants' appetites and moderate blood glucose concentrations, while significantly improving vitamin E and monounsaturated fat intake. After a month of snacking on 250 calories from almonds daily, participants did not gain weight. While the study was only four weeks long, it suggests that snacking on almonds could be a weight-wise strategy.

Dr. Penny-Kris Etherton from Pennsylvania State University presented results from a new randomized, controlled clinical study examining the effects of consuming 1.5 ounces of almonds vs. a calorie-matched, high carbohydrate snack on body weight in 52 adults with elevated LDL cholesterol (3). Total body weight did not differ between the two treatments, but the almond diet reduced overall abdominal mass, abdominal fat mass, and waist circumference compared to the high-carbohydrate snack. Although the study was just six weeks long, preliminary results suggest that snacking on almonds may help decrease abdominal fat, an important risk factor for metabolic syndrome.

Additional research examining the relationship between almond consumption and cardiovascular and diabetes risk factors was showcased in a number of poster presentations at the conference:

A randomized, parallel-arm controlled study investigated the effects of adding 1.5 ounces of almonds daily to the diets of adult subjects with poorly controlled type II diabetes on C-reactive protein – without any dietary advice provided (4).

Another crossover, randomized clinical trial examined the metabolic response of 2 ounces of almonds compared to dairy fat in isocaloric and equal macronutrient meals consumed by overweight/obese pregnant women. Preliminary results suggest that almonds may help improve satiety, reduce appetite, and may help promote healthy weight gain during pregnancy, although further research is needed (5).

The body of evidence suggests snacking can be a weight-wise strategy, depending upon the foods consumed. The nutrient profile of almonds – low on the glycemic index and providing a powerful nutrient package including hunger-fighting protein, filling dietary fiber, "good" monounsaturated fats and important vitamins and minerals such as vitamin E, magnesium and potassium, makes them a satisfying, heart-smart snack choice that can help support a healthy weight.

Research Sources:

(1) Consumption of almonds is associated with increased nutrient intake, better diet quality, and better physiological status in adult participants (19+ y) from the NHANES (2001-2010). Papanikolaou Y, O'Neil CE, Nicklas TA., Fulgoni VL. Program No: 810.17; Poster session: C120.

(2) Effects of almonds as a snack or meal accompaniment on appetite, glycemia and body weight. Tan S-Y and Mattes RD. Experimental Biology 2014; Abstract No. 1927, Program No: 641.9; Poster presentation.

(3) Daily almond consumption (1.5 oz./d) decreases abdominal and leg adiposity in mildly hypercholesterolemic individuals. Berryman, CE, et al. Experimental Biology 2014, Program No: 117.8 ; Oral presentation.

(4) Almond supplementation without dietary advice significantly reduces C-reactive protein in subjects with poorly-controlled type 2 diabetes. Sweazea K.L., Johnston C.S., Ricklefs, K., Petersen, K., Alanbagy, S. Program No: 830.24 ; Poster session: C386

(5) The Effect of Almond Consumption on Satiety and the Postprandial Metabolic Response in High-Risk Pregnant Women. Henderson, M.N. Henderson, Sawrey-Kubicek, L., Mauldin, K. King, J.C. Program No: 1040.5 ; Poster session: C289

(iii) Almonds and Diabetes:

Lowering the glycemic load of a carbohydrate meal:

Almonds are not a high carbohydrate food and have the effect of lowering the glycemic load of a meal. Three important studies that highlight this issue are:

Jenkins DJ et al, "Almonds Decrease Postprandial Glycemia, Insulinemia, and Oxidative Damage in Healthy Individuals": Journal of Nutrition, 2006; 136(12):2987-92;

Josse AR, et al, "Almonds and postprandial glycemia – a dose response study". Metabolism 2007; 56(3): 400-4 Almond ingestion at mealtimes reduces post prandial glycemia and chronic ingestion reduces hemoglobin A1c in individuals with well controlled type 2 diabetes mellitus.

Metab Clin Exp (2011) This study points to the value of almond consumption for people managing Type 2 diabetes. The study's conclusion states: "These data show that modest almond consumption (28gms) favorably improves both short-term and long-term markers of glucose control in individuals with uncomplicated type 2 diabetes mellitus".

A low-GI diet has been shown to reduce the risk of Type 2 diabetes and help in its management:

Thomas D, et al. "Low glycemic index or low glycemic load, diets for diabetes mellitus. Chchrane Database Syst Rev. 2009(1): CD006296. This study indicated that a low-GI diet may reduce the risk of Type 2 diabetes and help in its management:

Rich source of health fats:

Almonds are rich in healthy monounsaturated fats and are low in saturated and trans fat. They also contain no cholesterol. Replacing saturated and trans fats with unsaturated fats improves insulin sensitivity and reduces Type 2 diabetes:

Riccardi, G et al. "Dietary fat, insulin sensitivity and the metabolic syndrome", Clin Nutr, 2004; 23(4): 447-56

Riserus, U et al. "Dietary fats and prevention of Type 2 diabetes". Prog Lipid Res. 2009;48(1):44-51

A good source of fibre:

Diets high in fibre may help manage diabetes and weight and can reduce the risk of developing Type 2 diabetes. Almonds are a high fibre food.

NHMRC (National Health and Medical Research Council) Micronutrients and dietary fibre papers;

Low in sodium:

Foods like almonds that are low in sodium provide benefits for blood pressure and heart health:

NHMRC Micronutrients and dietary fibre papers;

Reduced risk of diabetes:

The four year PREDIMED Mediterranean Diet study found those following the Med diet enriched with 30gms of almonds, walnuts and hazelnuts a day reduced their risk of diabetes by 52% compared to a reduced fat diet and regardless of changes in body weight and physical activity.

(iv) Almonds and the Mediterranean Diet:

Mediterranean diet reduces 24-hour ambulatory blood pressure, blood glucose, and lipids: one-year randomized, clinical trial

Reference:

Doménech M, Roman P, Lapetra J, García de la Corte FJ, Sala-Vila A, de la Torre R, Corella D, Salas-Salvadó J, Ruiz-Gutiérrez V, Lamuela-Raventós RM, Toledo E, Estruch R, Coca A, Ros E. Mediterranean diet reduces 24-hour ambulatory blood pressure, blood glucose, and lipids: one-year randomized, clinical trial. *Hypertension*. 2014 Jul;64(1):69-76.

The PREvención con DIeta MEDiterránea (PREDIMED) trial showed that Mediterranean diets (MedDiets) supplemented with either extravirgin olive oil or nuts reduced cardiovascular events, particularly stroke, compared with a control, lower fat diet.

(v) Almonds, Heart Health and Healthy Weight:

Tree Nut consumption is associated with better adiposity measures and cardiovascular and metabolic syndrome health risk factors in U.S. Adults: NHANES 2005-2010

Reference:

O'Neil CE et al Tree Nut consumption is associated with better adiposity measures and cardiovascular and metabolic syndrome health risk factors in U.S. Adults: NHANES 2005-2010. *Nutr J*. 2015 Jun 28;14:64. Conclusion: Tree nut consumption was associated with better weight status and some CVRF and MetS components.

A systematic review and meta-analysis of nut consumption and incident risk of CVD and all-cause mortality

Reference:

Mayhew AJ et al. A systematic review and meta-analysis of nut consumption and incident risk of CVD and all-cause mortality. *Br J Nutr*. 2015 Nov 9:1-14. [Epub ahead of print]. Conclusion: that higher nut consumption is associated with a lower risk of all-cause mortality, total CVD, CVD mortality, total CHD, CHD mortality and sudden cardiac death.

Dietary Almonds Increase Serum HDL Cholesterol in Coronary Artery Disease Patients in a Randomized Controlled Trial.

Reference:

Jamshed H, Sultan FA, Iqbal R, Gilani AH: Journal: Nutr J, 2015 Volume Aug 12. Conclusion: a low dose of almonds (10 g/d) consumed before breakfast can increase HDL cholesterol, in addition to improving other markers of lipid abnormality in CAD patients with low starting HDL cholesterol. This trial was registered at the Australian New Zealand Clinical Trial Registry as ACTRN12614000036617.

B/: Research from the Innova Database relating to new product development leveraging active health claims on pack shows a significant increase over the course of AL12001.

During 2015-16, 810 products were launched that had an active health claim on pack. This compares to 489 equivalent styled product claims in 2012-13.

2012-13	
Product Name	Product Count
Yogurt	85
Fish & Seafood	49
Baby Formula/Milk	42
Breakfast Cereals	33
Milk and Milk Drinks	19
Mayonnaise - Dressings & Vinegar	17
Cereal & Energy Bars	16
Snack Nuts & Seeds	14
Sports Bars	13
Bread & Bread Products	11
Sugar Confectionery	11
Energy Drinks	10
Juice & Juice Drinks	10
Dairy Alternative Drinks	8
Ice Cream - Take Home	8
Total	489

2013-14	
Product Name	Product Count
Baby Formula/Milk	86
Yogurt	58
Fish & Seafood	43
Breakfast Cereals	31
Cereal & Energy Bars	24
Rice	16
Juice & Juice Drinks	15
Baby Cereals & Biscuits	14
Cooking Sauces	14
Bread & Bread Products	13
Drinking Yogurt/Fermented Beverages	10
Milk and Milk Drinks	10
Prepared Pasta & Noodles	10
Baby Meals	9
Ready Meals	9
Total	494

2014-15	
Product Name	Product Count
Sports Powders	253
Yogurt	137
Fish & Seafood	66
Breakfast Cereals	65
Cereal & Energy Bars	40
Baby Formula/Milk	39
Juice & Juice Drinks	27
Ready Meals	23
Sports Bars	18
Snack Nuts & Seeds	15
Baby Cereals & Biscuits	13
Rice	13
Baking Ingredients & Mixes	12
Bread & Bread Products	12
Milk and Milk Drinks	12
Total	930

2015-16	
Product Name	Product Count
Yogurt	123
Breakfast Cereals	68
Fish & Seafood	62
Cereal & Energy Bars	40
Baby Formula/Milk	38
Sports Powders	30
Tea	27
Sports Bars	24
Milk and Milk Drinks	23
Other Meal Components	22
Baby Meals	21
Snack Nuts & Seeds	21
Baby Cereals & Biscuits	20
Dairy Alternative Drinks	19
Drink Concentrates & Mixes	18
Total	810

A key issue for the Australian almond industry and Australian horticulture more generally is the proliferation of products claiming to be actively healthy when their product composition would indicate otherwise. A key discussion with health professionals engaged during AL12001 was to emphasise the science behind the health claims of almonds and to differentiate these claims from the more spurious claims being promoted in the Australian food industry.

Example of misleading uses of health claims within the food category



Australian health professionals are aware of the misleading nature of many health claims used to promote a range of food products. The Australian Almond Nutrition Research and Educating Health Professionals program presented high-quality science that built on 20 years of published research.

In terms of looking at some specific health claims, it was relevant to highlight to the health professionals engaged throughout AL12001 the different approaches to lowering cholesterol. This is a health position that is also very important to the nutritional research on almond consumption.

Example of the Spread category:

It is important to understand the ways food manufacturers in the Spread category graphically depict their claim to 'lower cholesterol absorption': ie their spread lowers the rate that cholesterol is absorbed in the body. Note, it does not lower cholesterol; rather, it lowers the rate in which the cholesterol in food is absorbed.

By contrast, there is significant nutritional research that links daily almond consumption with lowering the LDL cholesterol of the participants in these studies.

Note, that the graphics on the two spread products highlight the phrase 'lower cholesterol' and minimise the word 'absorption'.



The Australian Almond Nutrition Research and Educating Health Professionals program engaged key health professionals in discussion around the heart health benefits of almonds within the context of a large range of food products that make health claims that may be misleading.

The Innova research also highlighted the growth in the health claims around the Paleo Diet. This is a relevant example of the power of a dietary trend or fad to influence Australians' perspective around nutrition. The Paleo Diet gained significant prominence through the advocacy of a well known Australian media and cooking personality who has no academic qualifications in nutrition. During 2015-16, 117 products were launched in Australia that claimed a 'Paleo' health benefit. While the Paleo Diet does not disadvantage almonds, the next fad could. It is important to maintain an ongoing dialogue with influential Australian health professionals to advocate on Australian Almonds' behalf.

2. Supporting major clinical nutritional research projects on almonds:

The Australian Almond Nutrition Research and Educating Health Professionals program has actively supported five research projects across four Australian universities and research bodies to conduct a range of nutritional research projects covering the health benefits of almonds.

i) Australian-Mediterranean Diet Research at La Trobe University

La Trobe University in Melbourne is conducting research in collaboration with numerous Melbourne hospitals – St Vincents Hospital, The Alfred Hospital, The Northern Hospital and Royal Melbourne Hospital – investigating the protective role of the Mediterranean Diet in a variety of chronic health conditions.

Assoc Prof Catherine Itsiopoulos from La Trobe University who is leading the research is recognized globally for her lifetime of work on the Mediterranean Diet.

There are two separate research projects using the Mediterranean Diet supplemented with Australian almonds in the treatment of two common chronic health conditions:

Project One: Evaluating where consumption of a Mediterranean-style diet after suffering an initial heart attack can reduce the risk of suffering a second heart attack and;

Project Two: Investigating whether the Mediterranean-style diet can reverse fatty liver and the metabolic syndrome (a cluster of high risk symptoms) in non-alcoholic fatty liver disease.

Assoc Prof Itsiopoulos has termed this Australian-Mediterranean Diet, the 'High Healthy Fat Diet'. This project will continue for the next two years.

ii) Mediterranean Diet and heart health at the University of South Australia:

Dr Karen Murphy has led a team at the University of South Australia studying the heart health benefits of a Mediterranean Diet with Australian almonds. This project's results are anticipated being published in the next 12 months.

iii) Exercise and Nutrition Research, Australian Catholic University, Melbourne:

This is a study titled "The role of satellite cells in the interference of muscle growth with concurrent training". It is the first Australian project to investigate the effects of a 12 week high protein diet including Australian almonds on the growth of muscle size and strength when resistance and endurance exercise are combined.

iv) Metabolic Health Research by CSIRO Adelaide:

Dr Welma Stonehouse, the Research Team Leader of the Diet, Lifestyle and Health Substantiation Group at CSIRO Adelaide, is leading a human intervention study looking at the effects of almonds on metabolic health. The participants in the study will consume 30 grams of almonds in Australian Almond snack containers twice a day in-between meals. 'Metabolic health' includes measures such as blood pressure, triglycerides, LDL-cholesterol, HDL cholesterol and Total cholesterol. This study has also received funding support from the Almond Board of California.

The value of these studies combined is approximately a million dollars for which the Australian Almond program has supported with almonds or our almond snacking containers for the various research trials.

It should also be noted that an additional PhD study is underway at the University of South Australia studying the role of almonds on cognitive health which is being funded by the Almond Board of California. This study is being led by Assoc Prof Alison Coates at the School of Health Sciences, University of South Australia.

3. Health professional engagement and education

Over the course of AL12001, Australian Almonds participated in 22 major health conferences. Two of these engagements were in New Zealand and Indonesia. During these conferences, we have engaged with more than 22,000 dietitians, sports nutritionists, General Practice doctors and nurses, fitness trainers and diabetes educators.

More than 4000 of these health professionals have requested our educational packs of snack tins and brochure to give to their patients and clients. This is a significant body of health advocates who are personally recommending almonds.

Table of Health Professional engagement by audience:

General Practice Doctors & Nurses	7800
Dietitians	4650
Fitness Professionals	5450
Diabetes Educators	4300
Total	22200

Below are summaries of the conferences attended by Australian Almonds during AL12001 by key health professional audience:

General Practice doctors and nurses

	2013	2014	2015	2016
General Practice	GPCE Sydney, May, Sydney	GPCE Melb: Nov, Melb	GPCE Melb: Nov, Melb	
	Engaged with 2000 GP doctors & nurses	Engaged with 1700 GP doctors & nurses	Engaged with 1800 GP doctors & nurses	
	Distributed 393 packs of snack tins & brochures	Distributed 260 packs of snack tins & brochures	Distributed 246 packs of snack tins & brochures	
	GPRA - General Practice Registrars Con: March, Canberra	Royal College of GP Conf: Oct Darwin		
	Engaged with 300 GP Registrars	Engaged with 2300 GP doctors & nurses		
	Distributed 67 packs of snack tins & brochures	Distributed 285 packs of snack tins & brochures		

Dietitians

	2013	2014	2015	2016
Dietitians & Nutritionists	Dietitians Assoc of Aust Conf: May, Canberra	Dietitians Assoc of Aust Conf: May, Brisbane	Dietitians Assoc of Aust Conf: May, Perth	Dietitians Assoc of Aust Conf: May, Melb
Dietitians Assoc of Aust	Engaged with 700 dietitians	Engaged with 900 dietitians	Engaged with 600 dietitians	Engaged with 1100 dietitians
	Distributed 216 packs of snack tins & brochures	Distributed 310 packs of snack tins & brochures	Distributed 194 packs of snack tins & brochures	Distributed 285 packs of snack tins & brochures
Sports Dietitians Aust		Sports Dietitians Aust Conf: April, Adelaide	Sports Dietitians Aust Conf: Oct, Melb	
		Engaged with 600 sports dietitians	Engaged with 450 sports dietitians	
		Distributed 195 packs of snack tins & brochures	Distributed 155 packs of snack tins & brochures	
Dietitians: NZ & Indonesia	NZ Dietitians Conf: Sep, Auckland		Workshop with Indonesian Dietitians Assoc	
	Engaged with 300 dietitians		Engaged with leadership team	
	Distributed 95 packs of snack tins & brochures		Workshopped opportunity for 'Aust Almonds' to partner with Indonesian dietitians	

Fitness Professionals

	2013	2014	2015	2016
Fitness Professionals	Fitness Expo: April, Sydney	Fitness Expo: April, Sydney	Fitness Expo: April, Sydney	Fitness Expo: April, Sydney
	Engaged with 1500 fitness trainers	Engaged with 1200 fitness trainers	Engaged with 1350 fitness trainers	Engaged with 1400 fitness trainers
	Distributed 200 packs of snack tins & brochures	Distributed 210 packs of snack tins & brochures	Distributed 190 packs of snack tins & brochures	Distributed 185 packs of snack tins & brochures

Diabetes Educators

	2013	2014	2015	2016
Diabetes Educators	Internation Diabetes Congress Dec 2013	Diabetes Educators Conf: Aug, Melb	Diabetes Educators Conf: Aug, Adelaide	Diabetes Educators Conf: Aug, Gold Coast
	Engaged with 1000 Diabetes professionals	Engaged with 1300 Diabetes professionals	Engaged with 900 Diabetes professionals	Engaged with 1100 Diabetes professionals
	Distributed 160 packs of snack tins & brochures	Distributed 210 packs of snack tins & brochures	Distributed 174 packs of snack tins & brochures	Distributed 190 packs of snack tins & brochures

4. Partnerships with Dietitians Association of Australia and Sports Dietitians Australia

The Australian almond industry's Nutrition Research and Educating Health Professionals program partners with both Sports Dietitians Australia and the Dietitians Association of Australia. Dietitians are the 'idea leaders' in nutrition and health in Australia. Members of this profession write and contribute to all the media platforms available in Australia. It is very important that members of this profession are regularly updated about the new nutritional science that relates to almonds.

It is important to note that our relationship with the DAA facilitated our meeting with the Indonesian Dietetics Association. This organization is in the early stages of development when compared to the DAA, but will grow in influence over time. The Indonesian Dietetics Association will be an important partner in Indonesia for the Australian almond industry. We were informed by them that Australian Almonds is the only Australian horticultural industry to commence forming a relationship with the Indonesian Dietetics Association.

Accredited dietitians and sports dietitians address the key health topics of the Australian almond nutrition research and educating health professionals program: heart health, diabetes, and weight management as well the value of almonds as a natural sports recovery food.

5. Developing a digital nutrition learning center for health professionals

During 2015, work has continued in the development of the Australian almond nutrition program's digital Learning Center.

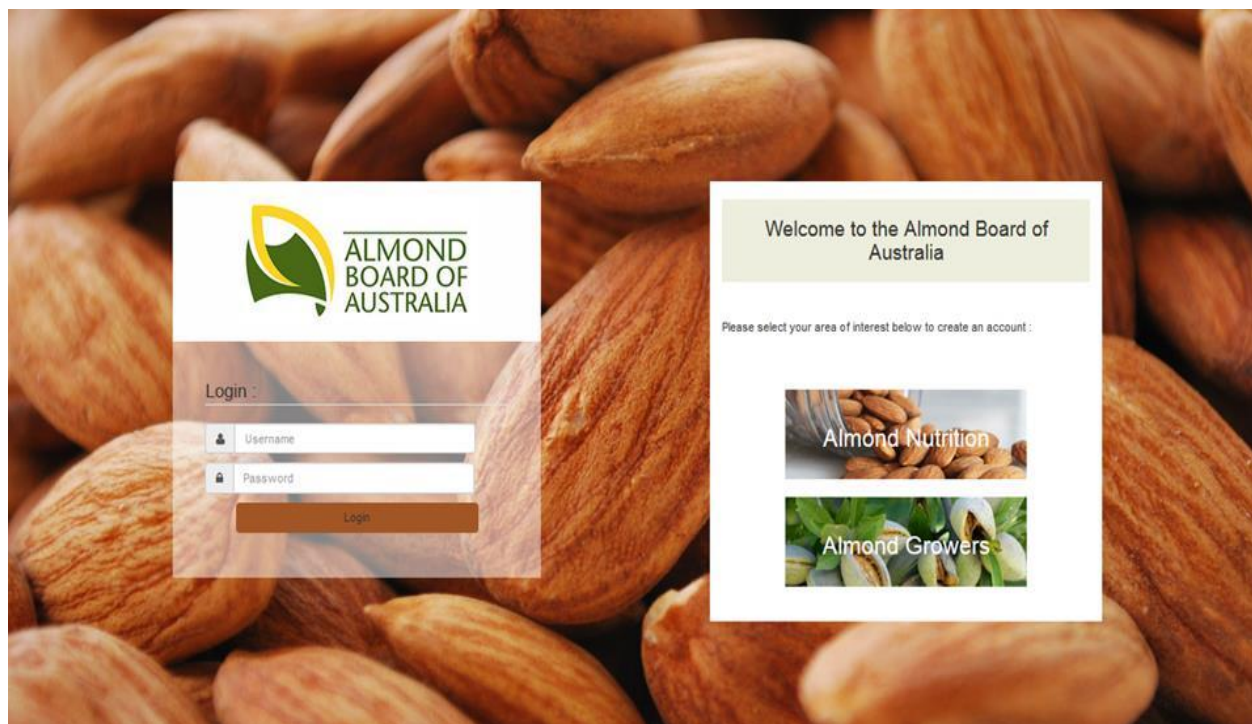
The focus of the first learning course will be to educate fitness professionals about a nutrition-based sports recovery program. This learning program is being developed by Sports Dietitians Australia. We are working on accreditation with Fitness Australia to ensure this course is recognised as part of their professional development.

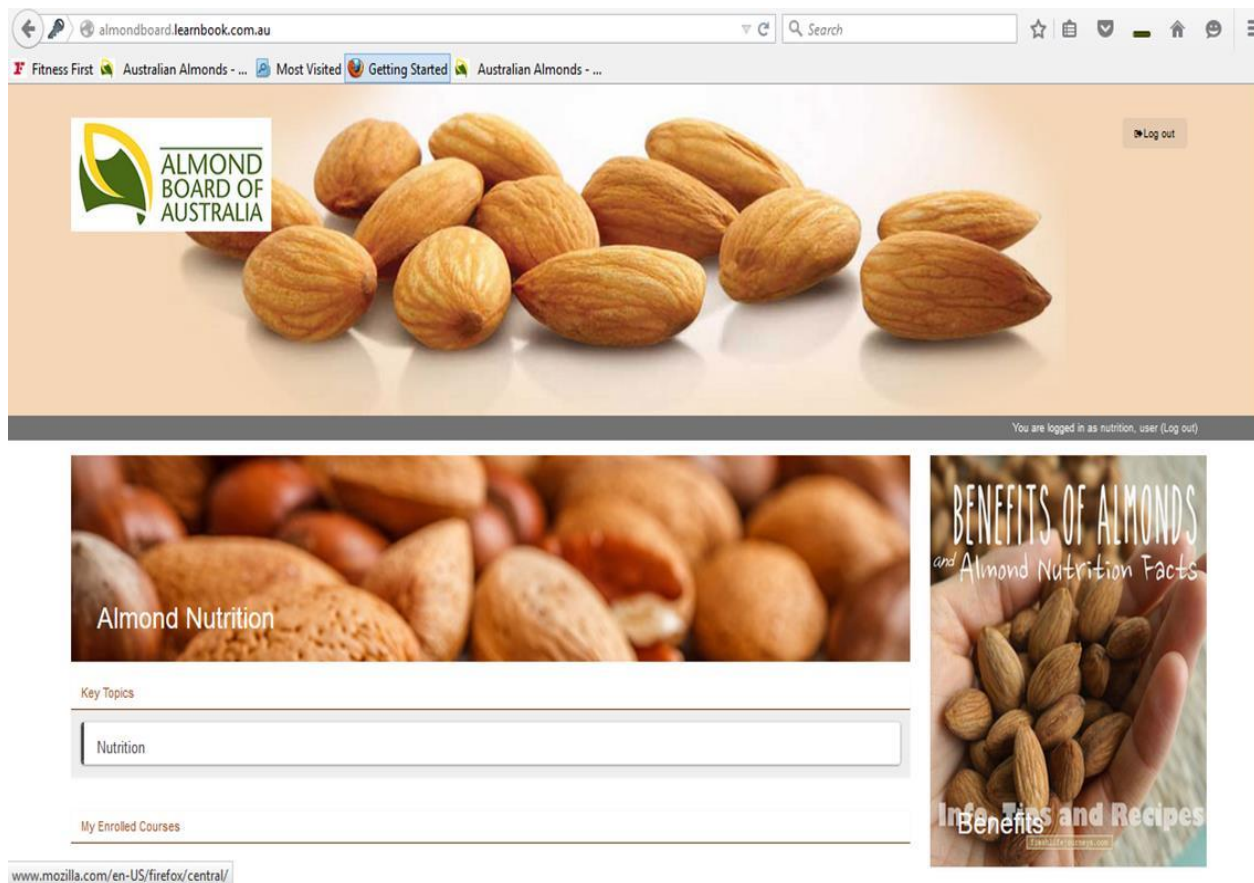
The digital Learning Center is operated by the specialist online learning platform – Moodle – which is used by universities around the world. More than 90 million people globally use this platform for online learning. This online learning centre will position the Australian almond industry as a leader in the education of health professionals.

The Australian Almond Nutrition Learning Centre will feature the key functional benefits of the Moodle-Learnbook product:

- Access to a comprehensive range of nutrition and health topics
- Nutrition research reports available by topic
- Webinar functionality
- A fully functional online educational course with multiple modules that need to be completed in sequence including an assessment/feedback mechanism.
- Detailed reporting of users and material accessed.

The Australian Almond Nutrition digital learning center is currently in development mode and is being advised by Dr Sara Grafenauer.





The Moodle technology's core functionality revolves around being a digital library, offering a comprehensive range of education opportunities and research project collaboration.

Outcomes

Strategy

The strategy of this three-year research and education project is to present almonds as an important part of a preventative health program as well as a proactive or aspirational health plan. The role of this project is to progressively research the latest nutritional studies as they relate to almonds and health and to communicate these findings to the key health professions we are addressing: dietitians, the general practice medical community (including GPs, GP registrars, practice nurses and practice managers) and fitness trainers.

Key Outcomes:

1. The project has increased the understanding by health professionals of the nutritional value of almonds to the key lifestyle health issues impacting on mainstream Australians: heart health, diabetes prevention and management and healthy weight. More than 22,000 health professionals have been personally engaged in this discussion and presented with scientific findings to support the nutritional value of almonds.

This growth in understanding the health benefits of almonds is also evidenced in the five major health studies using almonds that are currently underway in four universities across Australia. The cost of these research studies exceeds a million dollars.

2. The project has raised the profile of almonds as a food with aspirational health benefits leveraging the role of almonds as an ideal sports recovery snack. The active role of Sports Dietitians Australia and leading sports nutritionists in advocating almonds as part of the diet for committed and elite athletes highlights this outcome.

3. The project has engaged a significant segment of the four key audiences in this research and educational program: namely members of the general practice medical community, dietitians, fitness professionals and diabetes educators. The breakdown of the health professionals engaged during AL12001 is included below:

General Practice Doctors & Nurses	7800
Dietitians	4650
Fitness Professionals	5450
Diabetes Educators	4300
Total	22200

4. The project has increased the number of health professionals who advocate regular almond consumption to their clients and patients. The table below highlights the number of health professionals who have requested and received our educational packs to personally give to their patients and clients.

General Practice Doctors & Nurses	1251
Dietitians	1450
Fitness Professionals	785
Diabetes Educators	734
Total	4220

Evaluation and Discussion

The key strengths of AL12001 were:

- Presenting credible scientific research
- Developing positive relationships with key health professionals
- Building credibility around our message and our educational resources by consistently attending major health professional conferences
- Creating the environment in which more than a thousand health professionals including GPs, dietitians, fitness professionals and diabetes educators have personally given Australian almonds' educational resources to their patients and clients.

Evidence of the value health professionals perceive in the Australian Almonds' health message and nutritional resources can be seen in the frequent requests for support at a range of public health educational events such as diabetes educational exhibitions and heart health promotions at GP and hospital clinics.

The growing number of nutritional research studies involving almonds also highlights the value of AL12001 into the future.

One of the opportunities presented during AL12001 is to further develop educational resources to highlight the importance of almonds to a healthy diet for many of the cultures in Asia. Growing Australian almonds into Asian communities will become a key component of the growth of the Australian almond industry over the medium term. One specific opportunity is to continue to grow our relationships with the Indonesian Dietetic Association. Their advocacy will be important as Australian Almonds grows within the Indonesian community.

One issue that requires the Australian almond industry to be constantly vigilant is 'dietary fads'. There are a multiplicity of 'voices' and 'leaders' within the Australian food and nutrition environment. Many if not most of these leaders have no scientific qualifications in nutrition. These self-appointed leaders may be chefs, cooks, fitness trainers or lawyers who have lost weight through a certain diet such as David Gillespie, author of 'Sweet Poison'. While some of these 'fads' such as the Paleo Diet do not currently disadvantage almonds, others emerging certainly could. For example, David Gillespie who promoted the sugar is poison philosophy, is currently recommending his followers to eat nuts sparingly "as an occasional treat" because they contain Omega 6 fats. Fortunately, this advice has been quickly corrected by a range of dietitians. One prominent nutritionist, Associate Prof Tim Crowe from Deakin University's School of Exercise and Nutrition Services wrote in the Sydney Morning Herald/Melbourne Age (April 13, 2015): "Eating nuts regularly is consistently linked to long-term health benefits including a lower risk of heart disease – it is not a food that should be only an occasional treat".

The Australian almond industry needs to continue to grow the profile of healthy almonds in the minds of key health influencers so that they can genuinely and independently advocate almonds to Australians and counter the next wave of dietary fads.

Recommendations

Health and nutrition will continue to be a major strategic pillar for the growth of the Australian almond industry.

It is essential that Australia's key health professionals learn about the importance of almonds to a healthy daily diet. It is also vital that these health professionals advocate this importance to their patients and clients and to communicate this message via their access to mainstream and social media.

The life-stage approach to the health benefits of almonds developed through AL12001 will continue to be relevant.

The Australian almond industry's continued growth requires:

- The communication of new nutritional research findings to key health professionals to ensure Australian almonds continues to grow its profile with health professionals of influence within the Australian food industry. Personal engagement during major health professional conferences is a very effective mode of communication.
- Supporting targeted nutritional research projects in Australian universities to complement the research work conducted around the world
- Supporting public health educators in relation to heart health, diabetes prevention and healthy weight. These three health issues will remain of major significance to the Australian population and will feature in ongoing national preventative health strategies.

The development of the Australian Almonds digital nutritional learning center will see the Australian almond industry at the forefront of health professional education. It will house a comprehensive library of nutritional studies as well as facilitate coursework that will be accredited with professional development points.

It is recommended that the Australian almond industry develop a program for educating health influencers in key Asian markets. This will involve developing specific resources that meet the needs of the targeted Asian communities. It also means building relationships with key health bodies such as the Indonesian Dietetic Association.

Scientific Refereed Publications

None to report.

IP/Commercialisation

No IP, commercialization or confidentiality issues or development to report.

References

No References to report.

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Appendices

No Appendices to report.