Lisa Yates graduated with a Masters of Nutrition and Dietetics, from the University of Sydney in 1996. Since that time Lisa has had a varied career from managing her own part time private practice since 1996 to working in public relations and industry since 1999. Past clients include the Australian Sugar Industry, MasterFoods Australia New Zealand and PepsiCo/Gatorade.

Lisa has been the Program Manager and Dietitian for the Australian Tree Nut Industry’s health promotion program – Nuts for Life since 2005. Lisa is also a Board Director of the Dietitians Association of Australia.
Roasted or raw?

Lisa Yates
Nuts for Life
Program Manager and Dietitian
ABA Conference Oct 2012
Overview

• RAW NATURAL VS ROASTED ALMONDS?
  - Is there a nutritional difference between raw natural & roasted almonds?
  - Effects of Roasting – benefits, issues, research

• FOOD REGULATIONS & PUBLIC HEALTH POLICY UPDATE
  - Health claims standard
  - Front of pack labelling
  - Dietary Guidelines
### Nutrient content of unsalted almonds per 100g

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Raw natural</th>
<th>Dry roasted</th>
<th>Oil roasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>4.7</td>
<td>2.5</td>
<td>2.8 (50% decrease)</td>
</tr>
<tr>
<td>Energy (kJ)</td>
<td>2415</td>
<td>2499</td>
<td>2549 (6% increase)</td>
</tr>
<tr>
<td>Protein (g)</td>
<td>21</td>
<td>21</td>
<td>21 (SAME)</td>
</tr>
<tr>
<td>Fat total (g)</td>
<td>49</td>
<td>52</td>
<td>55 (12% increase)</td>
</tr>
<tr>
<td>Fat saturated (g)</td>
<td>3.7</td>
<td>4.0</td>
<td>4.2 (14% increase)</td>
</tr>
<tr>
<td>Fat unsaturated (g)</td>
<td>43</td>
<td>45</td>
<td>48 (12% increase)</td>
</tr>
<tr>
<td>Vitamin E (mg)</td>
<td>26</td>
<td>24</td>
<td>26 (SAME)</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>264</td>
<td>267</td>
<td>291 (10% increase)</td>
</tr>
<tr>
<td>Thiamin (mg)</td>
<td>0.2</td>
<td>0.08</td>
<td>0.09 (50% decrease)</td>
</tr>
</tbody>
</table>

Data Comparison Issues

- Source of the information – mixture of Californian Almond Board data from 1999 and 2006
- Sample - varietal differences?, seasonal differences?, representative sample of consumers will eat?
- Processing – dry and oil roasting from same raw natural sample
- Labs – different labs?, different techniques?, inter lab variation
- Clinical relevance – does it matter?
New almond data

- Research to show the energy content of almonds may be overestimated by about 20%.
- Calculating the energy content of almonds using the Atwater factors (37kJ/g fat, 17kJ/g protein, 16kJ/g carbs, 7kJ/g fibre) compared to lab work and body absorption shows almonds contain less energy.
- CAB applying to USDA to have nutrient composition of almonds in nutrient database altered to reflect this which impacts on labels.
- Some discussion by FSANZ staff re this.
Beneficial effects of roasting

• Dry roasted almonds improve total and LDL cholesterol as well as raw natural almonds in humans

• Roasted almond skins contain antioxidants and have a higher antioxidant capacity
Benefits of roasting beyond health

• Change in flavour/taste profile
  - Dry or oil roasted almonds have more volatile and odour causing compounds than raw natural almonds


• Crunchier texture appeals to many
Issues - Acrylamide

• Depending on time and temperature, roasting almonds can produce acrylamide – a probable human carcinogen - found to cause cancer in animal studies.

• Acrylamide forms during the browning Maillard reaction between reducing sugars (glucose) and amino acids (asparagine) during high-temperature cooking (above 120°C) - roasting & baking.

• FSANZ agrees with FAO and WHO that “There is no direct evidence acrylamide causes cancer in humans but food regulators, including FSANZ, agree that we should reduce our exposure.”

• FSANZ: Foods in Australia that provide the most acrylamide are: hot potato chips, potato crisps, coffee, toast (crust), sweet plain biscuits and wheat biscuit-style breakfast cereals – more likely in carbohydrate foods.

Funded by Californian Almond Board

Six varieties of almonds collected in various regions of California over two harvest years and roasted at 138°C for 22 min had an average acrylamide level of 187 ± 71 µg/kg (ppb)

Controlling the roasting temperature at or below 146°C resulted in acrylamide levels below 200 ppb at all roasting times.

Stability studies found acrylamide levels decreased by 13-69% (average of ~50%) after 3 days of storing roasted almonds at 60°C

Short term elevated temperature storage - approach to mitigate acrylamide in roasted almonds
Acrylamide ppb 2yr average

- Sonora
- Nonpareil
- Carmel
- Butte

acrylamide ppb 2yr average
## Acrylamide content of foods (ppb or ug/kg)

<table>
<thead>
<tr>
<th>Food Description</th>
<th>Acrylamide Content (ppb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Diamond Roasted Salted Almonds</td>
<td>236</td>
</tr>
<tr>
<td>Blue Diamond Smokehouse Almonds</td>
<td>457</td>
</tr>
<tr>
<td>Planters Salted Almonds</td>
<td>249</td>
</tr>
<tr>
<td>Planters Smoked Almonds</td>
<td>339</td>
</tr>
<tr>
<td>Planters Halves and Pieces Lightly Salted Cashews</td>
<td>ND</td>
</tr>
<tr>
<td>Super G Dry Roasted Peanuts Unsalted</td>
<td>28</td>
</tr>
<tr>
<td>Super G Honey Roasted Peanuts</td>
<td>ND</td>
</tr>
<tr>
<td>Super G Party Peanuts</td>
<td>ND</td>
</tr>
<tr>
<td>McDonalds French Fries 7 US locations</td>
<td>155-497</td>
</tr>
<tr>
<td>Good Health Natural Foods Honey Dijon Mustard J ulienne Potato Stix</td>
<td>1168</td>
</tr>
<tr>
<td>Lipton Recipe Secrets Onion Soup &amp; Dip Mix</td>
<td>1184</td>
</tr>
</tbody>
</table>

**Effects of acrylamide dependent on your exposure - eat less processed foods and more whole natural foods**

For more information, visit: [www.fda.gov/food/foodsafety/foodcontaminantsadulteration/chemicalcontaminants/acrylamide/ucm053549.htm](http://www.fda.gov/food/foodsafety/foodcontaminantsadulteration/chemicalcontaminants/acrylamide/ucm053549.htm)
Acrylamide study 2


- Acrylamide formation started only when almond kernel temperature exceeded ~130°C.
- Acrylamide content increased with increasing darkness in roasting colour.
- Almonds with higher initial moisture content contained less acrylamide after roasting.

- European Almonds contained significantly less asparagine and formed significantly less acrylamide during roasting as compared to the US almond varieties.
Issue - Advanced Glycation Endproducts (AGEs)


- Roasting almonds produces Advanced Glycation Endproducts (AGEs) through Maillard reaction but no link between level of AGEs and roasting temperature
- AGEs are produced by the body and increase in those with diabetes and high blood glucose – glycosylated haemoglobin - test for diabetes
- AGEs are pro-inflammatory and linked with aging

- **Is this clinically relevant for almonds?**
- No research that roasted almond AGEs have negative effect in health in fact almonds/skins contain antioxidant/ anti-inflammatory compounds
- Natural almonds help reduce blood glucose when mixed in carbohydrate meals
Summary

• No reason to avoid eating roasted almonds
• Roasted almonds nutritionally similar to raw natural almonds except if salted
• Change roasting temperature and length of roast to produce lighter coloured almonds to help reduce acrylamide and AGEs
• Almonds contain antioxidant/anti-inflammatory compounds
• Roasted/raw natural almonds help lower blood cholesterol
• Almonds help reduce blood glucose levels when added to carbohydrate meals
• Taste better!
Food Regulation
Public Health Policies
P293 Nutrient, Health and Related Claims draft standard


- The Forum requested FSANZ undertake consultation on draft Standard before finalising the Review by 30 April 2012 and to consider risk management approaches to fat free and %fat free nutrition content claims

- Feb 2012 - public consultation undertaken
P293 – health claims

• June 2012 - Forum met requesting further consideration by FSANZ on substantiation of GLHC eg “Almonds are a heart healthy food”

• July 2012 Forum teleconference - Ministers agreed on a system for GLHCs:
  - pre-approved GLHC food relationships in the standard as well as
  - the option of self-substantiation of claims which comply with criteria in the Standard.

• Ministers confirmed the use of nutrient profiling scoring criteria (NPSC) to ensure that health claims only appear on healthy foods.
Ministers requested further consultation with public health groups, consumers, industry and officials in further developing the approach to GLHCs.

Ministers agreed to extend the review period until 31 October 2012.
Front of Pack Labelling (FoPL)

- Dec 2011 – Govt’s response to the Food Labelling Blewett Review – develop an interpretative FOPL system for Australia by Dec 2012
- Over 2012 – Two working groups - Technical Design (design and methodology) and Implementation (Framework, social marketing campaign, monitoring and evaluation)
- At this stage based on star rating system like white goods not traffic lights
- Will not meet Dec 2012 deadline, possibly first half 2013
- Lots of issues yet to be solved:
  - Which foods to have it – will single ingredients products be exempt?
  - Per 100g or per serve of food?
  - Is nutrient density being addressed? Using NPSC from P293?
  - Which food categories and which nutrient criteria?
Australian Dietary Guidelines

- Review by Dept Health and Aging and NHMRC (www.eatforhealth.gov.au)
- Dec 2011 Core foods report to underpin the science behind the DGs released:
  - Australian Adults need to increase their consumption of nuts by 350% and children 9-18yrs by ~250%
  - Serving size for nuts 30g - matches our 30g handful of nuts message
  - Depending on age, gender, life stage, energy needs: 2-14 serves of nuts a week
  - Stopped using term “meat alternatives”
  - Keeping nuts in the lean meat and poultry, fish, eggs, nuts and seeds, and legumes/beans food group
DGs

Evidence suggests that consumption of nuts (65–110g per day) is associated with a reduction in serum cholesterol, a surrogate marker for cardiovascular disease (Grade C, Section 8.2 in Evidence Report)

Evidence suggests that the consumption of nuts (65–110g per day) does not lead to weight gain, at least in the short term (Grade C, Section 8.1 in Evidence Report)

Including real images of nuts in the Australian Guide to Healthy Eating (AGHE) plate model not illustrations of peanuts only.
Dietary Guidelines

• Dec 2011- Feb 2012 – Public Consultation of draft DGs and AGHE
• www.eatforhealth.gov.au

• Final DGs and plate model due Dec 2012 however due to the number of submissions received may/may not meet this deadline at this stage

• Some industry groups would like to see a Healthy Fat Food Group included and have been lobbying for same but no further public consultation on this issue to my knowledge

• Last week released a draft DGs & Environment appendix for public consult due Nov 2
Questions?

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(contributors section)
www.twitter.com/nutsforlife
www.facebook.com/nutsforlife
Nut Allergy activities

- Relationship building with Anaphylaxis Australia
- Quick response to media issue in June 2012 on breastfeeding and increased nut allergy risk – reviewed the research, provide critique and studies showing the opposite to AA and ASCIA – resulted in AA and ASCIA interviews and positive spin
- Newspoll survey on Mums’ opinions on school food bans in July-Sept 2012 media release in October with AA
- Sneak peak - 35% of mums accidentally or intentionally send kids to school with banned food so school bans don’t work
International Congress of Dietetics Sydney Sept

- ~2300 dietitians in Sydney from all over world (1400 Australians)
- Joint venture with N4L and INC:
  - Brought to Australia two researchers from PREDIMED Mediterranean Diet study
  - Spoke on the ICD program 3 times include our Nut Symposium
  - 35 attended our media cocktail event with media interviews
  - Twitter competition – 99 retweets reaching over 15,000 others on twitter
  - Trade exhibit - distributed just under 3000 serves of nuts in 3 days and 13,000 N4L resources

Resulted in 140+ media clips (print news, online news, online sites, online magazines, blogs, twitter, new radio, talk back radio

More media to come as long lead magazines come in up to March 2013