Tree nuts - to eat or not to eat?

Will eating tree nuts early prevent tree nut allergy?

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Outline

• How common are nut allergies?
• Which tree nut allergies are more common in Australia?
• Severity of reactions to tree nuts.
• Update on the current management and treatment of tree nut allergy.

Why is the prevalence of food allergy so high in Australia?

What do we know about prevention of food allergy?

Will there be a treatment for food allergy in the future?
Over 10% had challenge-proven food allergy at 12 mths of age (n=5000)

- egg: 9%
- peanut: 3%
- other: 2%

TOTAL: >10%

Osborne et al. JACI 2011; 127: 668-678
Why is there limited data on tree nut allergies?

**Previous Management Nut Allergies**
1/3 patients allergic to one nut have allergies to additional nuts

**Current Management Nut Allergies**
For those with a single nut allergy work to include non-allergic nuts

- Avoidance no longer recommended as a preventative strategy for food allergy.
- Increased diversity of diet and increased understanding of health benefits of nuts=increased nut consumption

Overall Treenut Allergy Prevalence by Region (%)
How common are tree nut allergies in Australia?

- 2010 Victorian School entrance health questionnaire at 5yrs of age (n=60,000)
- Parent reported peanut allergy 2.7%
- Parent reported tree nut allergy 1.7%
How common are tree nut allergies in Australia?

Food Allergy Prevalence in the SchoolNuts Study (n=9700)
10-14yrs, Melbourne, Australia

- Any Food Allergy
- Peanut
- Tree Nut

Clinic confirmed vs Self Reported

Sasaki, M et al. Prevalence of clinic-defined food allergy in early adolescence: The SchoolNuts Study, under submission
Which tree nut allergies are more common?

<table>
<thead>
<tr>
<th>Region, Study details</th>
<th>% of tree nut allergies reporting reactions to the individual tree nuts (number with specific tree nut allergy/total number with any tree nut allergy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td></td>
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<tr>
<td>Burney, 2014 (Multi country)</td>
<td>Hazelnut 76% (1805/2311), Walnut 24% (517/2121)</td>
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<tr>
<td>Cafferelli, 2011 (Italy)</td>
<td>Hazelnut 100% (2/2)</td>
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<td>Mutafzayev, 2012 (Turkey)</td>
<td>Hazelnut 42% (104/243), Walnut 34% (83/243), Pistachio 22% (55/243)</td>
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<tr>
<td>Kaye, 2013 (Turkey)</td>
<td>Walnut 66% (4/6), Hazelnut 17% (1/6), Pistachio 17% (1/6)</td>
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<tr>
<td>Osterbelle, 2009 (Denmark)</td>
<td>Hazelnut 75% (56/75), Brazil nut 31% (23/75), Walnut 5% (4/75), Almond 3% (2/75)</td>
</tr>
<tr>
<td>Ranse, 2005 (France)</td>
<td>Hazelnut 53% (20/19), Walnut 32% (6/19), Almond 10% (2/19), Cashew 5% (1/19)</td>
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<tr>
<td>Roehrs, 2004 (Germany)</td>
<td>Hazelnut 100% (10/10)</td>
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<tr>
<td>US</td>
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<tr>
<td>Sichener, 1999</td>
<td>Walnut 37% (24/65), Cashew 12% (7/65), Brazil nut 12% (8/65), Almond 11% (17/155), Pecan 11% (7/65), Hazelnut 4.8% (3/65), Macadamia 5% (2/65), Unspecified 9% (6/65)</td>
</tr>
<tr>
<td>Sichener, 2010</td>
<td>Walnut 48% (41/84), Cashew 34% (29/84), Pecan 30% (26/84), Almond 29% (25/84), Pistachio 22% (19/84), Brazil nut 22% (19/84), Hazelnut 20% (17/84), Macadamia 20% (17/84), Pine nut 15% (11/84)</td>
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<tr>
<td>UK</td>
<td></td>
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<tr>
<td>Venter, 2008</td>
<td>Brazil nut 33% (2/6), Almond 33% (2/6), Hazelnut 17% (1/6), Cashew 17% (1/6)</td>
</tr>
<tr>
<td>Venter, 2006</td>
<td>Almond 33% (1/3), Brazil nut 33% (1/3), Hazelnut 33% (1/3)</td>
</tr>
<tr>
<td>Roberts, 2005</td>
<td>Walnut 24% (16/41), Brazil nut 24% (10/41), Almond 22% (9/41), Cashew 15% (10/41), Hazelnut 7% (3/41), Pecan 7% (3/41)</td>
</tr>
<tr>
<td>Tarlo, 1996</td>
<td>Hazelnut 50% (2/2), Cashew 50% (1/2)</td>
</tr>
<tr>
<td>Mexico</td>
<td></td>
</tr>
<tr>
<td>Bedolla-Baraja, 2014</td>
<td>Walnut 100% (2/2)</td>
</tr>
</tbody>
</table>

Which tree nut allergies are more common – Australia?

Individual Tree Nut Allergy Prevalence in the SchoolNuts Study (n=9700)
10-14yr olds- Melbourne, Australia

Clinic Confirmed  Self Report

Cashew  Pistachio  Walnut  Hazelnut  Macadamia  Pecan  Almond  Brazil Nut  Not specified

Sasaki, M et al. Prevalence of clinic-defined food allergy in early adolescence: The SchoolNuts Study, under submission
Overall food allergy rates high in Australia.

- Up to 10% in 12mth old infants, dropping to around 5% by early adolescence
- Tree nut allergy around 2%
- Cashew nut allergy the most common tree nut allergy in Australia.
How severe are nut allergies?

**Anaphylaxis admissions to hospital**

- Over 50% increase since 2005
- Most common in children 0-4 yrs
- Biggest increase has been in 5-14yr age grp
- Most common foods peanut and tree nut

How severe are nut allergies?

Food-induced anaphylaxis fatalities

- Increase in food induced anaphylaxis fatalities in Australia
- Seafood most common overall trigger
- Peanut and tree nut most common trigger in <20yo
- Unpublished data from Allergy & Anaphylaxis Aust since 2005
  - 2 x Macadamia
  - 1 x Pistachio
  - 1 x Walnut
  - 1 x Hazelnut
  - 1 x Almond

How common?

44.4% of 10-14 yr olds with likely IgE mediated food allergy reported a reaction in the past year (95%CI 40.3, 48.7)

• 10% severe reactions (95%CI 7.2, 12.2)

What foods?

Peanut and tree nut (cashew and walnut) the most common trigger foods

McWilliam et al. Adverse food reactions and anaphylaxis in the SchoolNuts Study: a population based study of adolescents, under submission
“Nut free” schools

• Have to eat the food to have anaphylaxis
• Nut bans not supported as a policy by ASCIA
• No food sharing
• Emphasis on action plans/training for recognition and treatment of anaphylaxis
• No nuts in cooking classes
• Nut free schools do not exist!
What are the implications of the change in nut allergy management?

**Food Allergy Prevention**

- Peanut and other nut pastes before 12mths
- Ground/meal forms of nuts for younger children

**Established Nut Allergy**

- Incorporation of tolerated nuts into the diet
- Nut in shell request/single origin nut producers
- Specific tree nut labelling important to families
Why is the prevalence of food allergy so high in Australia?

What do we know about prevention of food allergy?

Will there be a treatment for food allergy in the future?
Why is the prevalence of food allergy so high in Australia?

Current leading hypotheses of postnatal modifiable factors for the rise in food allergy – 5Ds

1. Hygiene hypothesis (microbial diversity, migration and the modern lifestyle) – Dogs and Dirt
2. Vitamin D hypothesis
3. Skin barrier function and infant feeding - Dry skin and Diet
   - the “Dual Allergen Exposure” or Lack hypothesis

Allen & Koplin J Allergy Clin Immunol in Practice 2016
What factors might prevent food allergy?

- Introduction of egg, peanuts and other allergenic solids at 4-6 mth is safe and may even be protective
- Owning a dog and more siblings appears protective
- Maintaining Vitamin D in the normal range may be critical in the first year of life
- Prevention of eczema through maintaining the skin barrier function (moisturising and “don’t soap the baby”) may be important
- Genes, family history and migration all appear to play a part
Randomized Trial of Peanut Consumption in Infants at Risk for Peanut Allergy

George Du Toit, M.B., B.Ch., Graham Roberts, D.M., Peter H. Sayre, M.D., Ph.D., Henry T. Bahnson, M.P.H., Suzana Radulovic, M.D., Alexandra F. Santos, M.D., Helen A. Brough, M.B., B.S., Deborah Phippard, Ph.D., Monica Basting, M.A., Mary Feeney, M.Sc., R.D., Victor Turcanu, M.D., Ph.D., Michelle L. Sever, M.S.P.H., Ph.D., Margarita Gomez Lorenzo, M.D., Marshall Plaut, M.D., and Gideon Lack, M.B., B.Ch., for the LEAP Study Team*

The LEAP trial:
High risk cohort = early onset eczema and/or egg allergy
86% Relative Reduction  

70% Relative Reduction  

81% Relative Reduction

**Intention-to-Treat Analysis**

**SPT-Negative Cohort** (N=530)  
- Prevalence of Allergy: Avoidance Group = 13.7%, Consumption Group = 1.9%  
P<0.001

**SPT-Positive Cohort** (N=98)  
- Prevalence of Allergy: Avoidance Group = 35.3%, Consumption Group = 10.6%  
P=0.004

**Both Cohorts** (N=628)  
- Prevalence of Allergy: Avoidance Group = 17.2%, Consumption Group = 3.2%  
P<0.001
Infant feeding and allergy prevention

Key recommendations

- When your infant is ready, at around 6 months, but not before 4 months, start to introduce a variety of solid foods, starting with iron rich foods, while continuing breastfeeding.
- All infants should be given allergenic solid foods including peanut butter, cooked egg and dairy and wheat products in the first year of life. This includes infants at high risk of allergy.
- Hydrolysed (partially and extensively) infant formula are not recommended for prevention of allergic disease.

Introduction

ASCIA has developed these guidelines to outline practices that may help reduce the risk of infants developing allergies, particularly early onset allergic diseases such as eczema and food allergy.

These guidelines are based on current published evidence, including information published after 2010. The revised recommendations listed above are based on a consensus agreement by participants in the Infant Feeding Summit hosted by the Centre for Food & Allergy Research (CFAR) in May 2016.
Will there be a treatment for food allergy in the future?
Probiotic and Peanut OIT (PPOIT) RCT

- Objective reaction ever PLUS sIgE / SPT >95% PPV for of PA
- Objective reaction in past 2 years PLUS +ve sIgE / SPT

62 children with peanut allergy

Blood, stool, saliva samples taken at various time points

0 18 19 21 mos

DBPC Peanut Challenge

SPT
Clinical Outcomes

If 9 children received PPOIT, 7 would benefit

(NNT 1.27; 95%CI, 1.06-1.59)

Primary outcome: sustained unresponsiveness

Secondary outcome: desensitisation
Thank you for your attention!

www.foodallergyresearch.com