“Food Allergy in Japan”

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Department of Allergy
Regarding my presentation,
I declare no conflict of interests.
Prevalence of Allergic Diseases among Japanese Children

Summary from Sagamihara cohort study and other studies in Japan
Food Allergy and Anaphylaxis - Progress in a Past Decade

2000: Established a Study Group of Health and Labor Sciences (1st Term) (Food labeling)
2001-2002: Nationwide Food Allergy Monitoring Survey
2001: Started a food challenge test network research.
2001: Started an epidemic survey on food allergy in Sagamihara City.
2002: Foods containing allergens now have a allergen indication label.

2003: Established a Study Group of Health and Labor Sciences (2nd Term) (Measures to Anaphylaxis)
2003: Survey on fatal cases due to food allergy
2005: EpiPen can now be used for treatment of food allergy.
2005: Published ‘Food Allergy Treatment Guideline 2005’
       Issued ‘Food Allergy Guideline 2005’

2006: Established a Study Group of Health and Labor Sciences (3rd Term) (Dissemination of food challenge tests)
2006: Food allergy-related services (food challenge test and nutritional guidance) covered under the governmental medical treatment fee system.
2007: Current status on treatment of allergy diseases reported by the Ministry of Education, Culture, Sports, Science and Technology. (The report says food allergy disease rate as 2.6%.)
2008: Issued an Allergy Disease Control and Guidance Table and Action Guideline.
2008: Food challenge tests to outpatients are now covered under the governmental medical treatment fee system.

2009: Established a Study Group of Health and Labor Sciences (4th Term) (Preventive measures)
2009: Use of EpiPen is now allowed to Emergency Life-Saving Technicians.
2011: Issued Guide for Actions against Allergy at Nursery Schools.
Food Allergy Management Guideline 2011
(1st edition in 2005, and 3rd revision, November in 2011)

We have revised the following contents;

- New epidemiological data on food allergy
  (Nationwide survey in 2008)
- Diagnosis (New probability curves including CRD)
- OIT (Concern from Research Group)
- Social Countermeasures developed in the recent a few years
【Method】
In 2013, 521 training programs in Japanese pediatric board were asked by questionnaire if they perform OFC routinely or not.

【Results】
Reply 381 (Recovery rate 73.1%)

OFC facilities in inpatient or outpatient 326/521 (62.6%)
食物アレルギー研究会
Japanese Society of Food Allergy

Information
2015.6.23
今日の会を実施しました。
2015.4.1
新たなオプションを追加しました。
2015.3.25
「資料リンク」のページに食物アレルギーの診断の手引き2014が掲載されました。
2015.2.15
「資料リンク」のページに食物アレルギーの診断の手引き2014が掲載されました。

Topics

【やすや食と健康研究所】2015年度研究助成のお知らせ

「やすや食と健康研究所」（株式会社やすやが運営する研究助成機関）より研究助成に関するご案内がありましたのでお知らせ致します。

【募集期間】2015年7月6日（月）～8月6日（木）（裁量締め切り）
【対象となる研究内容】
さまざまな食品・飲料・生活習慣と健康との関わりを具体的に焦点を当てた研究を募集。
【募集要項・詳細など】http://ouzkou.jp/
募集の詳細に関しては、研究所のウェブサイトにてご確認ください。

【食物アレルギーの診断の手引き2014（資料ダウンロードのご案内）】

この度、厚生労働科学研究事業による「食物アレルギーの診断の手引き2014」（研究代表者：木村弘之）が刊行されました。「資料」ページからダウンロード可能なPDFファイルを掲載致しましたので、是非ご活用下さい。

【学校のアレルギー疾患対応資料のご案内】

文部科学省のホームページにて、学校のアレルギー疾患対策の資料が掲載されました。
OFC facilities in Japan

たとえば・・・関東エリアをクリック

★掲載施設について★
この一覧に掲載されている施設は調査に対して返信があり掲載認可のあった施設で、負荷試験を行っている全ての施設を網羅するものではありません。
## OFC facilities in Japan

### Links
- [OFC facilities in Japan](http://foodallergy.jp/)

### Table

<table>
<thead>
<tr>
<th>Location</th>
<th>Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tokyo</td>
<td>Clinic</td>
<td>-</td>
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<tr>
<td>Osaka</td>
<td>Clinic</td>
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<tr>
<td>Sapporo</td>
<td>Clinic</td>
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</tbody>
</table>

**Note:** The table above lists OFC facilities in Japan. Clicking the link will lead you to the official website for more detailed information.
### Objective items of allergic food labeling in the world (2013)

<table>
<thead>
<tr>
<th>Items/country</th>
<th>CODEX&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Japan</th>
<th>EU</th>
<th>USA</th>
<th>Canada</th>
<th>Australia/New Zealand</th>
<th>Korea</th>
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<tr>
<td>implementation date&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2002/4</td>
<td>2004/11</td>
<td>2006/1</td>
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<td>2004/5</td>
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</tr>
<tr>
<td>Cereal included gluten</td>
<td></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>Hen’s egg</td>
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<tr>
<td>Cow’s milk</td>
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<td>O</td>
<td>O</td>
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<td>O</td>
</tr>
<tr>
<td>Fish</td>
<td></td>
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<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Soybean</td>
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<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Nuts&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td>O</td>
<td>O</td>
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<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Buckwheat</td>
<td></td>
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<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Fruits</td>
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<td>O</td>
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<td>O</td>
<td>O</td>
</tr>
<tr>
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<td>O</td>
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<td>O</td>
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<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

1) CODEX: International Standard of food is developed by intergovernmental organizations that FAO and WHO established.
2) Cereal included gluten: wheat, rye, barley, oat bran, Spelt Flour and those hybrid.
3) Nuts: almond, hazelnut, walnut, cashew nut, brazil nut, pecan nut, pistachio nut, macadamia nut, Queensland nut.
4) Mollusk: bearded clam, mussels, squid, octopus
Allergen Labeling System In Japan

Process to amend the Food Sanitary Law (1)

- “First Nation Wide Survey on immediate type food allergy” was carried out from 1997-1999. Total 1522 food allergy cases seen by Drs were gathered.

- June 1999: The joint FAO/WHO Codex Alimentarius Comission Session agreed to include eight kinds of foods containing ingredients known to be allergens in labeling.

- Based on the data obtained from the survey (1997-99), 24 items (> 4 cases) were nominated as the candidates for allergen labeling system in 2000.

### 1998 & 1999 survey on immediate food reactions seen by doctors

<table>
<thead>
<tr>
<th>Offending foods</th>
<th>Total</th>
<th>0 year</th>
<th>1 year</th>
<th>-3 year</th>
<th>-6 year</th>
<th>-19 year</th>
<th>≥ 20 year</th>
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<tr>
<td>Eggs</td>
<td>420 (29.6)</td>
<td>197 (47.4)</td>
<td>72 (30.4)</td>
<td>89 (30.8)</td>
<td>35 (25.0)</td>
<td>19 (9.2)</td>
<td>8 (6.1)</td>
</tr>
<tr>
<td>Milk products</td>
<td>324 (22.8)</td>
<td>128 (30.8)</td>
<td>66 (27.8)</td>
<td>70 (24.2)</td>
<td>34 (24.3)</td>
<td>21 (10.1)</td>
<td>5 (3.8)</td>
</tr>
<tr>
<td>Wheat</td>
<td>147 (10.4)</td>
<td>40 (9.6)</td>
<td>20 (8.4)</td>
<td>35 (12.1)</td>
<td>12 (8.6)</td>
<td>27 (13.0)</td>
<td>13 (9.9)</td>
</tr>
<tr>
<td>Buckwheat</td>
<td>82 (5.8)</td>
<td>1 (0.2)</td>
<td>10 (4.2)</td>
<td>16 (5.5)</td>
<td>10 (7.1)</td>
<td>29 (14.0)</td>
<td>16 (12.2)</td>
</tr>
<tr>
<td>Fish</td>
<td>73 (5.1)</td>
<td>15 (3.6)</td>
<td>9 (3.8)</td>
<td>10 (3.5)</td>
<td>5 (3.6)</td>
<td>13 (6.3)</td>
<td>21 (16.0)</td>
</tr>
<tr>
<td>Fruits</td>
<td>66 (4.6)</td>
<td>6 (1.4)</td>
<td>13 (5.5)</td>
<td>13 (4.5)</td>
<td>8 (5.7)</td>
<td>19 (9.2)</td>
<td>7 (5.3)</td>
</tr>
<tr>
<td>Shrimp</td>
<td>51 (3.6)</td>
<td>0 (0.0)</td>
<td>2 (0.8)</td>
<td>4 (1.4)</td>
<td>4 (2.9)</td>
<td>22 (10.6)</td>
<td>19 (14.5)</td>
</tr>
<tr>
<td>Meat</td>
<td>44 (3.1)</td>
<td>9 (2.2)</td>
<td>2 (0.8)</td>
<td>4 (1.4)</td>
<td>4 (2.9)</td>
<td>14 (6.8)</td>
<td>11 (8.4)</td>
</tr>
<tr>
<td>Peanuts</td>
<td>34 (2.4)</td>
<td>3 (0.7)</td>
<td>12 (5.1)</td>
<td>5 (1.7)</td>
<td>6 (4.3)</td>
<td>5 (2.4)</td>
<td>3 (2.3)</td>
</tr>
<tr>
<td>Soybean</td>
<td>27 (1.9)</td>
<td>5 (1.2)</td>
<td>8 (3.4)</td>
<td>4 (1.4)</td>
<td>3 (2.1)</td>
<td>4 (1.9)</td>
<td>3 (2.3)</td>
</tr>
<tr>
<td>Etc.</td>
<td>152 (10.7)</td>
<td>12 (2.9)</td>
<td>23 (9.7)</td>
<td>39 (13.5)</td>
<td>19 (13.6)</td>
<td>34 (16.4)</td>
<td>25 (19.1)</td>
</tr>
<tr>
<td>total</td>
<td>1420</td>
<td>416</td>
<td>237</td>
<td>289</td>
<td>140</td>
<td>207</td>
<td>131</td>
</tr>
</tbody>
</table>

Allergen Labeling System In Japan

Process to amend the Food Sanitary Law (2)

- In collaboration with the Ministry of Health, Labor, and Welfare, the expert panel on food allergy suggested two classes of labeling in November 2000; Mandatory by ministerial ordinance (5 items), and Recommended by notice (19 items).

- The Food Sanitary Law was amended on March 15, 2001, and enforced from April 1, 2001 by The Ministry of Health, Labor, and Welfare.

- The extension of time for food industry was set as one year to prepare for Allergen labeling system. (April 1, 2002)

Process to amend the Food Sanitary Law (3)

- The detail of the allergen labeling system was discussed by consumers, food industry representatives, government officers, doctors, and researchers in 2001 and 2002.

- The detection system (ELISA) against egg, cow’s milk, wheat, buckwheat, and peanuts were developed by two companies, and were proved as by the Japanese government.

Allergen Labeling System In Japan
(Effective 4/1/2002)

Foods subjects to the system:
Prepackaged processed foods and food additives

Mandatory by ministerial ordinance:
1. Eggs
2. Cow’s milk
3. Wheat
4. Buckwheat
5. Peanuts

Recommended by notice:
Abalone, Squid, Salmon roe, Shrimp/prawn, Oranges, Crab, Kiwifruit, Beef, Tree nuts, Salmon, Mackerel, Soybeans, Chicken, Pork, Mushrooms, Peaches, Yams, Apples and Gelatine

Allergen Labeling System In Japan
Feature of Allergen Labeling System

1) “may contain” labeling is not allowed;
   It is requested to describe exact condition of possible contamination such as “using same line” or “products are made in the same building” etc

2) Small quantity labeling
   The five items subject to mandatory labeling shall be so labeled even in the case of carry-over or processing aids.
   The limit for labeling is minimum detection limit by the detection system. (A few ppm: a few mcg/g)

3) Detection system
   ELISA, and western blotting for the five items
### FASTKIT ELISA SERIES

#### Kit Components

<table>
<thead>
<tr>
<th>Letter</th>
<th>Component Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Antibody-immobilized microtiter plate (8 wells × 12 lanes)</td>
<td>1 Plate</td>
</tr>
<tr>
<td>B</td>
<td>Standard solution (1,000ng/mL)</td>
<td>500μL × 1 vial</td>
</tr>
<tr>
<td>C</td>
<td>Dilution buffer</td>
<td>100mL × 1 vial</td>
</tr>
<tr>
<td>D</td>
<td>Biotin-conjugated antibody</td>
<td>150μL × 1 vial</td>
</tr>
<tr>
<td>E</td>
<td>Avidin-conjugated enzyme</td>
<td>150μL × 1 vial</td>
</tr>
<tr>
<td>F</td>
<td>Chromogenic substrate</td>
<td>12mL × 1 vial</td>
</tr>
<tr>
<td>G</td>
<td>Condensed extraction buffer</td>
<td>100mL × 1 vial</td>
</tr>
<tr>
<td>H</td>
<td>Solution to stop reaction</td>
<td>12mL × 1 vial</td>
</tr>
<tr>
<td>I</td>
<td>Condensed wash solution</td>
<td>100mL × 1 vial</td>
</tr>
<tr>
<td>J</td>
<td>Instruction leaflet</td>
<td>1 copy</td>
</tr>
</tbody>
</table>

#### Representation

- **<ELISA EGG>**
- **<ELISA MILK>**
- **<ELISA WHEAT>**
- **<ELISA PEANUT>**
- **<ELISA BUCKWHEAT>**
<table>
<thead>
<tr>
<th>Food</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egg</td>
<td>Egg protein ELISA Kit (Ovalbumin)</td>
</tr>
<tr>
<td></td>
<td>Egg protein ELISA Kit (Ovomucoid)</td>
</tr>
<tr>
<td>Milk</td>
<td>Milk protein ELISA Kit (Casein)</td>
</tr>
<tr>
<td></td>
<td>Milk protein ELISA Kit (β-Lactoglobulin)</td>
</tr>
<tr>
<td>Wheat</td>
<td>Wheat protein ELISA Kit (Gliadin)</td>
</tr>
<tr>
<td>Buckwheat</td>
<td>Buckwheat protein ELISA Kit</td>
</tr>
<tr>
<td>Peanut</td>
<td>Peanuts protein ELISA Kit</td>
</tr>
</tbody>
</table>
Allergen Labeling System In Japan

Maintenance of Allergen labeling system

• Once per 3 years, the system is reviewed by Government, consumer, food industry, and food allergy expert doctors and researchers etc.

• For that purpose, Nation wide food allergy monitoring system is established, and the survey is repeated also once per three years.

Since April, 2002, the labeling of ingredients is mandatory for products known to trigger food allergies and severe symptoms, even if they contain only very small amounts of causative ingredients (over a few μg/g). The product is limited from processed foods, but over-the-counter sale products and food in restaurants are excluded. Provide this information to the patients and/or guardians before they start the elimination diet.

### Name of specific items

<table>
<thead>
<tr>
<th>Duty (7)</th>
<th>Egg, milk, wheat, buckwheat, peanut, shrimp, crab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommend (18)</td>
<td>Bearded clam, calamari, salmon caviar, orange, kiwi fruit, beef, walnut, salmon, mackerel, gelatin, soybean, chicken, banana, pork, matsutake mushroom, peach, yam, apple</td>
</tr>
</tbody>
</table>

Subjects of survey

169 food allergy patients’ parents at Sagamihara National Hospital

- Age of patients: $49.3 \pm 35.6\text{mo}$  M/F=1.9
- Age of first onset of symptom: $10.1 \pm 14.1\text{mo}$
- Number of elimination foods: $2.9 \pm 2.5$
- Eliminated foods:
  1. Hen’s egg: 135
  2. Cow’s milk: 79
  3. Wheat: 47
  4. Peanuts: 51
  5. Fish egg: 28
- Past history of anaphylaxis: 44.2%
- Experience of symptom by extremely small amount: 80.2%
Evaluation of “Allergy Food Labeling”

Check the labeling daily shopping
n=169

Usefulness for daily life
n=169

Reliability of labeling system
n=165

Comprehension and understanding of “Allergy Food Labeling”

Comprehensibility of food labeling
n=168

Correct Understanding of food labeling system
n=164

Experience of accidental intake by misreading and mislabeling

By misreading of the label:
- Yes: 30.9%
- No: 69.1%

By mislabeling:
- Yes: 13.9%
- No: 86.1%

n=165

Allergen components in wheat

- **albumins and globulins**
  - Tri a 15 - AAI monomer
  - Tri a 28 - AAI dimer
  - Tri a 29, 30 - AAI tetramer
  - Tri a 12 - profilin
  - Tri a 14 - LTP
  - Tri a 18 - hevein-like
  - Tri a 25 - thioredoxin
  - Tri a 33 - serpin
  - Homologs to components in timothy

- **gliadins**
  - Tri a 19 - omega-5 gliadin
  - Tri a 21 - alfa/beta gliadin
  - Tri a gamma gliadin
  - Tri a omega-2 gliadin

- **glutenins**
  - Tri a 26 - HMW glutenin
  - Tri a 36 - LMW glutenin

- **gluten**
Immediate type of wheat allergy
(mostly seen during childhood)

• Onset during infancy
• IgE sensitization proceeds
• Mostly complicated with infantile eczema
• Independent of exercise
IgE to wheat and ω-5 gliadin in wheat allergics and non-wheat allergics

WA= wheat allergics
137 challenge positives
36 convincing history

NoWA= no wheat allergics
78 challenge negative
60 convincing history

Oral Immunotherapy to wheat anaphylaxis

• Entry Criteria
  1) Past episodes of anaphylaxis and/or
  2) Proven anaphylaxis by OFC prior to OIT
Flow diagram of this study (1)

29 subjects underwent first baseline DBPCFC (2010 June-2011 July)

21 subjects showed a systemic reaction

8 had no or mild symptoms

3 did not receive OIT
They did not agree to the protocol

18 subjects started with OIT (OIT group)

2 withdrew from therapy
1 had persistent abdominal pain
1 did not continue the protocol

16 subjects were analyzed at the 24-month follow-up

JACI 2015 in press
50 subjects have a past history of wheat anaphylaxis

11 were excluded
10 had eliminated wheat from the diet 2 years or less.
1 underwent the wheat OFC less than 2 years after developing first anaphylaxis.

28 were excluded
Age when they underwent wheat OFC was less than 7 years old.

11 subjects were recruited as the historical control group
Study protocol

Emergency medications & telephone call (24 h)

Loratadine and Montelukast

First baseline DBPCFC
Second baseline OFC

Rush phase
5 days

Long-term build-up phase

Maintenance phase
>3 months

Processed foods

Allergen avoidance for 2 weeks

Final OFC

First baseline DBPCFC
Second baseline OFC

Rush phase
5 days

Long-term build-up phase

Maintenance phase
>3 months

Processed foods

Allergen avoidance for 2 weeks

Final OFC

JACI 2015 in press
## Dosing schedule of OIT

### Rush phase

<table>
<thead>
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<th>Step</th>
<th>Wheat protein (g)</th>
</tr>
</thead>
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<td>1</td>
<td>0.05</td>
</tr>
<tr>
<td>2</td>
<td>0.10</td>
</tr>
<tr>
<td>3</td>
<td>0.21</td>
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<td>4</td>
<td>0.42</td>
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<td>9</td>
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### Long-term build-up phase

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</tr>
<tr>
<td>9</td>
<td>2.34</td>
</tr>
<tr>
<td>10</td>
<td>2.6</td>
</tr>
<tr>
<td>11</td>
<td>2.86</td>
</tr>
<tr>
<td>12</td>
<td>3.12</td>
</tr>
<tr>
<td>13</td>
<td>3.38</td>
</tr>
<tr>
<td>14</td>
<td>3.64</td>
</tr>
<tr>
<td>15</td>
<td>3.9</td>
</tr>
<tr>
<td>16</td>
<td>4.16</td>
</tr>
<tr>
<td>17</td>
<td>4.42</td>
</tr>
<tr>
<td>18</td>
<td>4.68</td>
</tr>
<tr>
<td>19</td>
<td>4.94</td>
</tr>
<tr>
<td>20</td>
<td>5.2</td>
</tr>
</tbody>
</table>

JACI 2015 in press
Comparison of outcome between OIT and historical control group in two years

(a) OIT group (n = 18)

(b) Control group (n = 11)
Adverse allergic reactions and their treatment during the OIT protocol

<table>
<thead>
<tr>
<th>Adverse reactions and treatments</th>
<th>Rush phase (n = 18)</th>
<th>Long-term build-up phase and maintenance phase (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of intakes of OIT</td>
<td>143</td>
<td>5778</td>
</tr>
<tr>
<td><strong>Adverse reactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total, n(%)</td>
<td>42 (26.4%)</td>
<td>486 (6.8%)</td>
</tr>
<tr>
<td><strong>Severity of symptoms</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild, n(%)</td>
<td>30 (18.9%)</td>
<td>358 (5.0%)</td>
</tr>
<tr>
<td>Moderate, n(%)</td>
<td>12 (7.5%)</td>
<td>125 (1.7%)</td>
</tr>
<tr>
<td>Severe, n(%)</td>
<td>0 (0%)</td>
<td>3 (0.04%)</td>
</tr>
<tr>
<td><strong>Organ-specific symptoms</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin, n(%)</td>
<td>13 (8.2%)</td>
<td>207 (2.9%)</td>
</tr>
<tr>
<td>Mucosal, n(%)</td>
<td>16 (10.1%)</td>
<td>78 (1.1%)</td>
</tr>
<tr>
<td>GI tract, n(%)</td>
<td>20 (12.6%)</td>
<td>162 (2.3%)</td>
</tr>
<tr>
<td>Respiratory, n(%)</td>
<td>22 (13.8%)</td>
<td>234 (3.3%)</td>
</tr>
<tr>
<td>Cardiovascular, n(%)</td>
<td>0 (0%)</td>
<td>1 (0.01%)</td>
</tr>
<tr>
<td><strong>Treatments</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total, n(%)</td>
<td>16 (11.1%)</td>
<td>186 (2.6%)</td>
</tr>
<tr>
<td>Use of antihistamine oral or i.v., n(%)</td>
<td>11 (6.9%)</td>
<td>141 (2.0%)</td>
</tr>
<tr>
<td>Use of steroid oral or i.v., n(%)</td>
<td>0 (0%)</td>
<td>42 (0.6%)</td>
</tr>
<tr>
<td>Use of β2-inhalation, n(%)</td>
<td>9 (5.7%)</td>
<td>118 (1.7%)</td>
</tr>
<tr>
<td>Use of adrenaline i.m., n(%)</td>
<td>0 (0%)</td>
<td>3 (0.04%)</td>
</tr>
</tbody>
</table>
Changes in clinical responses to OIT

Time on OIT (day)

Subjects' rate (%)

- Tolerant
- Desensitization

(n = 18)
Changes of wheat-specific IgE level

(a) OIT group (n = 15)

(b) Control group (n = 7)

\[ p = 0.0002 \]

\[ p = 0.2500 \]
Wheat Allergy due to Hydrolyzed Wheat Protein
(Cha no Shizuku; Yuka)

More than 2000 Japanese people developed wheat allergy due to Hydrolyzed wheat protein.

They had used ‘Cha no Shizuku’ soap which contained hydrolyzed wheat protein.

(https://www.jsaweb.jp/)

(https://www.yuuka.co.jp/product/soap.action)
Sensitization to Development

Abbreviations:
HWP, Hydrolyzed wheat protein;
WDEIA, Wheat-dependent exercise-induced anaphylaxis

Allergology International. 2012;61:529-537
# Difference between conventional WDEIA and new WDEIA

<table>
<thead>
<tr>
<th></th>
<th>CO-WDEIA</th>
<th>HWP-WDEIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>School child age-old age</td>
<td>Adults in their 20s-60s</td>
</tr>
<tr>
<td>Gender</td>
<td>Both genders</td>
<td>Predominantly female</td>
</tr>
<tr>
<td>History of HWP-supplemented soap use</td>
<td>None</td>
<td>Essential</td>
</tr>
<tr>
<td>Symptoms occur while using the soap before developing WDEIA</td>
<td>None</td>
<td>Often</td>
</tr>
<tr>
<td>Predominant symptom of WDEIA</td>
<td>Urticaria (wheat)</td>
<td>Angioedema (especially on the eyelids)</td>
</tr>
<tr>
<td>Anaphylactic shock</td>
<td>Sometimes</td>
<td>Occasionally</td>
</tr>
</tbody>
</table>

Abbreviations: CO-WDEIA, conventional wheat-dependent exercise-induced anaphylaxis; HWP-WDEIA, hydrolyzed wheat protein wheat-dependent exercise-induced anaphylaxis.

**Fig. 2** Eyelid edema induced by challenge test with a combination of wheat and aspirin.
Thank you for your attention!