Highlighting of allergens found in edible crickets (*Ornithachris turbida cavroisi*) from Niger using 2D Western blot

- a clinical case report -

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http://www.provivam.com/
40 y.o. man presenting crickets, caterpillars and shrimps allergies

Clinical symptom: anaphylactic shock to crickets

SPT:

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>(+)</th>
<th>(-)</th>
<th>Cricket*</th>
<th>Cockroach*</th>
<th>Caterpillar*</th>
<th>shrimp</th>
<th>House dust mites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>0</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

* Prick to prick

sIgE measurements:

- sIgE shrimps extract = 56,7 kUA/L
- sIgE shrimps tropomyosin (rPen a 1) = 0,11 kUA/L
- sIgE dermatophagoides pteronyssinus = 5,17 kUA/L
- sIgE dermatophagoides farinae = 5,40 kUA/L
- sIgE house dust mites (rDer p1) = 0,08 kUA/L
- sIgE house dust mites (rDer p2) = 0,05 kUA/L
- sIgE house dust mites tropomyosin (rDer p10) = 0,07 kUA/L
- sIgE CCD = 0,07 kUA/L
What are the responsible allergens of crickets allergy?

A 1D and 2D Western blots were performed to answer to this question!
Introduction

1. **Protein extraction**

   - Urea
   - CHAPS
   - TBP
   - Biolytes
   
   → Total proteins

2. **2DE Electrophoresis**

   - IEF → Electric charge
   - SDS-PAGE → Size
   
   - pH 3
   - pH 10
   - HMW Proteins
   - LMW Proteins

3. **Protein transfer**

   - Cathod
   - Blotting paper
   - SDS-PAGE
   - PVDF membrane
   - Blotting paper
   - Anod

4. **Western blot**

   - Detection signal (colorimetric or chemiluminescent)
   - Enzyme-conjugated Secondary Antibody
   - Patient Antibody
   - Target protein

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Figure 1: SDS-PAGE (sodium dodecyl sulfate polyacrylamide gel electrophoresis) with crickets extract.

Figure 2: 1D WB showed the sIgE reactivity against four proteins with crickets extract.

1D SDS-PAGE:

1D WB:

- Hexamerin?
- Hemocyanin?
- Tropomyosin?
- Arginine kinase?
- Sarcoplasmic calcium binding protein 1?
Figure 3: 2D SDS-PAGE with crickets extract.

Figure 4: 2D WB showed the sIgE reactivity with crickets extract.
Introduction

M & M

Results

Conclusion

• Tropomyosin, arginine Kinase, troponin C, sarcoplasmic calcium binding protein 1, hemocyanin and/or hexamerin are highlighted in crickets allergy by 2D WB according to the physical and chemical characteristics of proteins databases

• The identification of these proteins should be confirmed by mass spectrometry (LC-MS/MS)

• You should be aware of potential allergic reaction if you eat crickets…

⇒ It should be investigated!
Thank you for your attention

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