

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

Courtois J.^{1,2,*}, Hamidou T.^{3,*}, X. Van der Brempt⁴, R. Gadisseur⁵, E. Cavalier^{2,5}, S. Tollenaere^{1,6}

1: CRIG, Liège, Belgium; 2: Université de Liège, Belgium ; 3: Lamordé Hospital of Niamey, Niger; 4: Allergopôle, Hospital of Saint-Luc, Bouge, Belgium, 5: CHU of Liège, Belgium, 6: HELMo, Liège, Belgium; * : authors contributed equally to this study

Introduction

Entomophagy is the consumption of insects by humans. Currently, more than two billion people worldwide consume insects on a daily basis for their nutritional intake. However, the protein composition and the potential molecular allergens present in this new food matrix have still not been studied in detail or described in the literature. The aim of this study was to identify and characterize the molecular allergens found in the edible cricket *Ornithachris turbida cavroisi* from Niger.

Methods

A 40-year-old man, with a known allergy to crickets, presented a Grade II anaphylactic shock after consumption. Following this, a prick to prick test was performed and additionally the serum of this patient was collected. To further our study, a total *Ornithachris turbida cavroisi* protein extraction was carried out and proteins were separated on the basis of their isoelectric point (Ip) and their molecular weight. In addition, 1D and 2D Western blots (WB) were done to determine the molecular allergen reactivity profile of this patient serum to the extract.

Results

Firstly, the prick to prick test was positive (10 mm). Secondly, the 1D WB showed the sIgE reactivity against three proteins which were confirmed using 2D WB. Indeed, the 2D WB confirmed the sIgE reactivity against a 17 kDa protein, with an Ip of 4, that could be troponin C. Furthermore, other spots of interest were located around 37 kDa, with an Ip of 3-4, that could be tropomyosin and around 37 kDa, with an Ip of 6-7, that could be arginine kinase.

Discussion

In the case of this patient, the underlying assumption suggests that the following proteins: troponin C, tropomyosin and arginine kinase are allergens found in edible crickets. This hypothesis will be confirmed by a precise identification using mass spectrometry (UHPLC-MS/MS).

Conclusion

These preliminary results have highlighted some different allergens found in edible crickets that are implicated in a Grade II anaphylactic shock following consumption. The implicated proteins are troponin C, tropomyosin and arginine kinase.