

## ***In Silico* Risk Assessment of Jaburetox, an Insecticidal and Antifungal Peptide Candidate for Developing Transgenic Crops**

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**INTRODUCTION.** Jaburetox (JBTX) is an insecticidal and antifungal recombinant urease-derived peptide from jack bean (*Canavalia ensiformis*) with potential for the development of transgenic plants. Nevertheless, there is some concern in relation to the food safety of novel proteins. Thus, an early food safety assessment of candidate proteins is recommended. **OBJECTIVES.** This study aimed to perform an *in silico* food safety study with JBTX following the recommendations of the Codex Alimentarius and ILSI. **MATERIAL AND METHODS.** The following analyses were performed: (a) history of safe use (HOSU) of *C. ensiformis* (source of urease gene); (b) search of similarity of the full and short amino acid sequences of JBTX compared to those of known toxic and/or allergenic proteins deposited in general (non-redundant NCBI) and allergen-specific (SDAP and AllergenOnline) databases; (c) sequence alignment of 6, 7 and 8 contiguous amino acids of JBTX found in allergenic proteins, with epitope sequences on AlgPred tool and (d) *in silico* sequential digestion of the test protein with pepsin and trypsin. **RESULTS AND DISCUSSION.** The HOSU revealed that *C. ensiformis* is a source of several toxic compounds; the most of them can be inactivated by heat treatment. Based data from previous reports showed that JBTX does not present acute toxic effects in mice and rats by intraperitoneal or oral route. No similarity between the full-length sequence of JBTX and known toxic, anti-nutritional and/or allergenic proteins was found. In addition, JBTX did not show any similarity with short sequences of allergens. The peptide JBTX presented several cleavage sites to pepsin and trypsin. **CONCLUSIONS.** The preliminary results suggest that JBTX does not represent a risk for human/animal consumption. However, additional *in vitro* and *in vivo* analysis must be performed to guarantee the safe use of this biotechnological tool.

Keywords: recombinant peptide, food safety, *Canavalia ensiformis*, GM crops.  
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