

## 08237 - Sessão de Cartazes II

**D - 02 - IDENTIFICATION OF PEPTIDE INHIBITORS OF INTESTINAL TRYPSIN-LIKE PROTEASES FROM SPODOPTERA FRUGIPERDA (LEPIDOPTERA: NOCTUIDAE)**

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## INTRODUCTION

The *Spodoptera frugiperda* J. E. Smith, 1797 (Lepidoptera: Noctuidae), commonly known as the fall armyworm, is an agricultural pest recognized for its migratory behavior, reproductive capacity, and resistance to insecticides. In recent years, there has been a growing interest in molecules capable of inhibiting the adaptive mechanisms associated with the expression of proteases in the lumen of these insects' intestines.

## OBJECTIVES

The tripeptides GORE 1 and GORE 2 were evaluated to assess their inhibitory capacity on trypsin-*like* activity in the intestine of *S. frugiperda*, as well as to determine whether the intestinal microbiota influences their action.

## MATERIALS AND METHODS

To determine the inhibition constants of these peptides, enzymatic assays were conducted using extracts containing trypsin-*like* enzymes from the intestines of 50 larvae. The larvae were dissected, and their intestines were frozen and macerated. After centrifugation, the supernatant was collected and partially purified using a p<sub>p</sub>-aminobenzamidine column. Enzymatic activity was measured using the chromogenic substrate BA<sub>p</sub>NA at concentrations ranging from 1.25 to 20.0 mM in a reaction medium containing 0.1 mol L<sup>-1</sup> Tris-HCl. The concentrations of the tripeptides GORE 1 and GORE 2 ranged from 0.04 to 1.28 mM. Additionally, the natural inhibitor SKTI, at concentrations ranging from 0.1 to 1.0 nM, and the synthetic inhibitor benzamidine, at concentrations ranging from 10 to 50 μM, were used.

## DISCUSSION AND RESULTS

The obtained K<sub>i</sub> values for the inhibitors, in respective order, were 1.41 mM, 0.49 mM, 4.75 nM, and 16.70 μM. The tripeptides demonstrated competitive inhibition and inhibitory activity, supported by data obtained through Michaelis-Menten, Lineweaver-Burke, and Dixon plots.

## CONCLUSION

Thus, evidence suggests the potential use of these peptides in the defense of agricultural crops.

**Palavras-chaves:** Kinetic enzymatic, Pest control, Protease inhibitors

**Patrocínio:** CNPq, FAPEMIG, CAPES