

New trypsin inhibitor from peanut and protein digestibility

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INTRODUCTION: Peanut is one of the seeds most consumed in Brazil. Although peanuts present high energy content, researches have shown a relationship between its consumption and a reduction in weight gain. Also, there are reports in the literature that postulate that the presence of trypsin inhibitors in peanuts may lead to a reduction in weight gain. **OBJECTIVES:** Isolation and characterization of this trypsin inhibitor of peanut *paçoca*, as well as, research if this inhibitor is responsible for in vivo protein digestibility reduction. **MATERIAL AND METHODS:** The trypsin inhibitor from peanut *paçoca* was isolated using ammonium sulfate (30–60%) following precipitation with acetone and was further isolated with Trypsin-Sepharose affinity chromatography. Analyses were conducted to assess the in vivo digestibility in Wistar rats. In vitro, the trypsin inhibitor was characterized (Optimum pH, temperature, kinetic parameters, thermal and pH stability). **RESULTS AND DISCUSSION:** The K_i and IC_{50} for trypsin inhibitor were estimated to be 0.085 mM and 0.15 nM (5 μ g) and is competitive, respectively. It was observed in optimum pH and temperature from 2.0 to 6.0 and 60°C to 80°C, respectively. The in vivo true digestibility was not significantly different between the control and trypsin inhibitor treated groups. **CONCLUSION:** The kinetic characterization puts the isolated trypsin inhibitor as a potential natural product. Besides that, the results indicate that, interestingly, animals supplemented with isolated trypsin inhibitor from peanut *paçoca*, showed no significant statistical differences in true and apparent protein digestibility compared to the control group.

KEYWORDS: Peanut *paçoca*; bioactive protein; true digestibility; apparent digestibility.

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