PROTEINASE ACTIVITY OF *Tetranychus evansi* AND *Tetranychus urticae*: EFFECTS OF INTERACTIONS AND ADAPTATIONS TO TOMATO-PLANT DEFENSES
ATIVIDADE DAS PROTEASES DE *Tetranychus evansi* E *Tetranychus urticae*: EFEITOS DAS INTERAÇÕES E ADAPTAÇÕES À DEFESA DO TOMATEIRO

M.A. Solís-Vargas[1,4], F.R. Ribeiro[2,4], B. Amorim[3,4], A.M.G. Bernardo[1], M.A.G. Oliveira[2,4] & A. Pallini[1]
[1]Department of Entomology/Laboratory of Acarology, UFV; [2]Departament of Biochemistry and Molecular Biology, UFV; [3] Undergraduate Agronomy Course, UFV; [4]Laboratory of Enzymology Proteins and Peptides Biochemistry of the Biotechnology Institute Applied to Agricultural (BIOAGRO), UFV, Viçosa, MG, Brazil.

Tetranychus evansi is a spider mite pest that successfully suppresses salicylic and jasmonate acid pathway of tomato induced defenses, which made it a novel model of herbivore. By the other hand, *Tetranychus urticae* shows a normal model of inducing plant defenses. However, when *T. evansi* interacts with *T. urticae*, in the same plant, proteinase inhibitors (PI's) are induced. This work aimed to describe digestive proteinases activity related to these two species and PI's effects. Clean tomato plants where infested with a) only *T. evansi* or b) *T. urticae* and c) both species simultaneously, control consisted on non-infected plants. Proteinase inhibitors from plant samples and total proteinase, serine and cysteine proteinase activity from herbivores were determined by spectrophotometry. Oviposition rates over disc leaves from treatments were obtained to determine *T. evansi* performance. Only plants attacked by *T. evansi* did not increase levels of PI's. Meanwhile, *T. urticae* induced plant defenses. The total proteinase activity of *T. evansi* has a two fold increase when shared plants with *T. urticae* and a high PI concentration were induced, which can be associated to direct effects of PI's concentration on *T. evansi* performance. *T. urticae* presented the higher total proteinase activity compared with *T. evansi* and induced a high PI concentration. The total proteinase activity patterns are correlated to *T. evansi* and *T. urticae* trypsin-*like* activity. Adversely, quimotrypsin-*like* activity showed an opposite pattern to thus of trypsin-*like* proteases, suggesting a low quimotrypsin-*like* production when the trypsin-*like* production increased. It seems that the action of PI's in the digestive system stimulates trypsin-*like* proteases in detriment of quimotrypsin-*like* as response to toxic PI's effects. Quimotrypsin-*like* proteases are more active under low PI's concentrations and trypsin-*like* proteases are produced as a response to few available aminoacids and PI's antimetabolic effects. *T. evansi* PI's suppression could become an advantage for other herbivore species that can be reflected in proteinase activity. However, sharing food resources decreased *T. evansi* performance due to PI's antimetabolic effects.

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