Brazil has a vast territory and a large number of plant species. Despite this, the biological potential of its biodiversity is scarcely explored. Plants have secondary metabolites, chemical constituents with recognized biological properties acting in plant defense or as an attractive substance for other organisms. *Croton campestris* A. St.-Hill (pop. “Velame do Campo”) is a shrub found in the Northeast and Southeast regions of the Brazil, popularly used with therapeutic purposes. Protein kinases are activated by phosphorylation and regulate a variety of cellular processes as cell proliferations, differentiation, gene expression and apoptosis. MAPK family is composed by ERK1/2, JNK1/2, p38 kinases, all of them are activated in several cell stressful situations. Catalase (CAT), superoxide dismutase (SOD) and glutathione-S-transferase (GST) are part of the antioxidant defense of organisms; these enzymes participate in the elimination and regulation of the reactive oxygen species generation. In this study, the effects of treatment of *Drosophila melanogaster* with *C. campestris* hydroalcoholic extract (CCHE) on Mitogen Activated Protein Kinases (MAPKs) and activity of antioxidant enzymes were investigated aiming to evaluate the *in vivo* toxicity of this plant since this specie is largely consumed by population due to its medicinal properties. For the experiments, adult flies were treated for 72h with 1% sucrose (control), 0.1, 1, 10 and 50mg/ml of extract diluted in 1% sucrose pipetted on a cotton wood. The treatment caused a significant increase in the activity of CAT, SOD and GST from 10mg/mL (187.7%, 78.13 and 39.43 % increase respectively, N=3; *p<0.05). A significant increase in p38 phosphorylation was observed (a 30.69% increase; n=3; *p<0.05), which is an indicator of cell stress. This study draws attention to the toxic properties of plants used in folk medicine and its interaction with live organisms, that could be attributed to the presence of plant metabolites.

Acknowledgements: Unipampa, CNPq, Fapergs, INCT-APA

Key Words: Antioxidant activity, *Croton campestris*, *Drosophila melanogaster*