5th BCNP Brazilian Conference on Natural Products
XXXI RESEM
Atibaia – SP – Brazil
ISBN: 978-85-66836-10-3
Oct. 26–29th 2015

TAPIRIRA GUIANENSIS PARASITIZED BY *PHORADENDRON CRASSIFOLIUM*: PHENOLIC COMPOUNDS.

Fernanda Anselmo Moreira, Luiza Teixeira-Costa, Gregório Cardoso Tápias Ceccantini e Cláudia Maria Furlan

Instituto de Biociências, Universidade de São Paulo, São Paulo, Brazil; fernanda.anselmo@usp.br

Plants are subject to various types of biotic and abiotic stresses and it is known that in such situations phenolic compounds are often involved as a chemical defense mechanism [1]. However, there are few studies on how those substances act in host-parasitic plant interaction. This study aimed to evaluate flavonoids and phenylpropanoids in leaves and branches of *Tapirira guianensis* Aubl. when parasitized by *Phoradendron crassifolium* (Pohl Ex DC.) Eichler. Leaves and branches of nine individuals of *P. crassifolium* (parasitic plant: **PL** and **PB**) were collected. Leaves and branches of six individuals of *T. guianensis* not-infested by *P. crassifolium* were collected (**NIL** and **NIB**). Nine individuals of *T. guianensis* infested by *P. crassifolium* were collected and divided into two groups, infested (**IHB**) and not-infested host branches (**NIHB)**. Of each group were collected leaves (**IHB-L; NIHB-L**) and branches. Infested branches were divided into proximal region (**IHB-P**), gall region (**IHB-G**), place where the parasitic plant settles, and distal region (**IHB-D**). All samples were lyophilized, crushed and subjected to extraction with 80% methanol. Extracts were analyzed by high-performance liquid chromatography-diode array detector at 280 and 352 nm. Constituents were quantified using standards curves of quercetin and *p*-coumaric acid. Nineteen constituents were detected in leaves of *T. guianensis*, among them quercetrin, already described for this species [2]. There were no significant differences among groups of leaves (Student's t-test; $p < 0.05$). For host branches were detected fifteen substances, as gallic and chlorogenic acids, the latter present only in **IHB-G**. **IHB-G** is composed by tissues of both host and parasitic plant, presenting chlorogenic acid, the major constituent of *P. crassifolium* branches (**PB**) but absent in *T. guianensis* branches. Not-infested branches of *T. guianensis* showed significantly higher levels of five substances, particularly **NIB** and **NIHB** showing the highest amounts of those substances. Studies using resistant and sensitive cultivars of host plants found out that resistant cultivars showed higher levels of phenolic compounds than sensitive cultivars [3,4]. Not-infested branches of *T. guianensis* also presented higher amounts of phenolics compounds than infested branches. Results suggest two possibilities for phenolic alteration: largest amounts, especially of phenylpropanoids, observed in not-infested branches might be a defense mechanism preventing new infestations; or, lower amounts of phenolics observed in infested branches could be a result of a reallocation of resources for the survival of the infested branch. (FAPESP 2013/23322-3)

References:

[1] Watson, R.R. (Ed) 2014. Polyphenols in plants: isolation, purification and extract preparation. Academic Press.

[2] Correia, S.J., David, J.M., Silva, E. P., David, J.P., Lopes, L.M.X. and Guedes, M.L.S. 2008. Flavonóides, norisoprenóides e outros terpenos das folhas de *Tapirira guianensis*. Química Nova. 31: 2056-2059.

[3] Hariri, E.B., Sallé, G. and Andary, C. 1991. Involvement of flavonoids in the resistance of two poplar cultivars to mistletoe (*Viscum album* L.). Protoplasma. 162: 20-26.

[4] Goldwasser, Y., Hershenhorn, J., Plakhine, D., Kleifeld, Y. and Rubin, B. 1999. Biochemical factors involved in vetch resistance to *Orobanche aegyptiaca*. Physiological and Molecular Plant Pathology. 54: 87-96.