efeito do Roundup® na viabilidade e funcionalidade mitocondrial em uma linhagem estabelecida de hepatócitos de *Danio rerio* (linhagem ZFL). Células foram expostas ao Roundup® (65µg.L^{-1}; 650µg.L^{-1}; 6500 µg.L^{-1} e 650000µg.L^{-1}) e após 24 e 48 h os seguintes parâmetros mitocondriais foram medidos: consumo de oxigênio, níveis de espécies reativas de oxigênio e viabilidade mitocondrial monitorada através do ensaio de MTT. No tempo de 24h foi observada uma redução (29,65±3,68%) da viabilidade mitocondrial nas células expostas à maior concentração de Roundup® quando comparadas com o grupo controle (100±14,75%). Os demais parâmetros não apresentaram variação significativa. No tempo de 48h, foi observado uma redução da viabilidade mitocondrial nas concentrações de 6500 µg.L^{-1} e 650000µg.L^{-1} de Roundup® (61,69±9,21% e 56,44±12,18%) quando comparadas ao grupo controle (100±6,71%). Além disso, também foi observado um aumento nos níveis de espécies reativas de oxigênio nas células expostas à maior concentração de Roundup® (227,17±25,01%) quando comparadas ao grupo controle (100±31,88%). O fato da maior concentração afetar a viabilidade mitocondrial indica que possivelmente o Roundup® esteja alterando a funcionalidade mitocondrial em termos de funcionamento da cadeia transportadora de elétrons, o que pode estar levando ao aumento dos níveis de espécies ativas de oxigênio nas células expostas ao contaminante. As células de zebrafish demonstraram ser mais sensíveis uma vez que no presente estudo foram observados efeitos em concentrações menores do que aquelas observadas em estudos com hepatócitos de ratos. Desta forma, pode-se inferir que o Roundup® altera a funcionalidade mitocondrial e consequentemente pode afetar a capacidade das mitocôndrias em produzir ATP.

SP110 Effect of the fungicide Pyraclostrobin on the development on larvae of Africanized Apis mellifera in environmentally relevant concentrations

R. Tadei, Universidade Federal de São Carlos UFSCar Sorocaba; C.d. Domingues, UNESP Universidade Estadual Paulista Júlio de Mesquita Filho / Departamento De Biologia - Centro de Estudos de Insetos Sociais; C. Souza, Universidade de Sao Paulo; G. Thomas, Universidade Federal de São Paulo / Escola Superior de Agricultura Luiz de Queiroz; O. Malaspina, UNESP Universidade Estadual Paulista Júlio de Mesquita Filho / Departamento De Biologia, Centro de Estudos de Insetos Sociais; E.C. Silva-Zacarin, Universidade Federal de São Carlos UFSCar Sorocaba / Departamento de Biologia, Laboratório de Ecotoxicologia e Biomarcadores em Abelhas

Currently, honey bees have suffered a great population decline triggers to the interaction of biotic and abiotic factors, including pesticides applied on crops, which reach agroecosystems in sublethal concentrations. However, toxicity tests of pesticides on honeybee workers carried out by regulatory agencies may not show the effects caused by sublethal doses/concentrations arriving in the hive, specifically on larval development. The fungicide pyraclostrobin is applied in several agricultural crops in Brazil and worldwide. It is known that it has an inhibitory action on mitochondrial function that affects a synthesis of ATP in adult bees, but there is no information about its effects on the ontogenetic development of these non-target insects. This study aimed to evaluate the effect of larval exposure to two environmentally relevant concentrations of piraclostrobin along the development of Africanized *Apis mellifera*. Bioassay was conducted with larvae from three different colonies and the larvae were individually contaminated by acute oral exposure, at the day 4, according to experimental groups (N = 16 larvae per group in triplicate): I) control (contain the acetone as solvent of fungicide); II) Pyraclostrobin 5 ppb; III) Pyraclostrobin 25 ppb; and Dimethoate 8.8 µg/larvae (standard insecticide for the test validation at concentration suggested by OECD). Cumulative mortality was observed in 72 hours after exposure (D5 to D7), and the statistical analyses were performed by generalized linear models (GLM). Mortality of honeybee larvae at 72 hours had no significant difference, p> 0.05 (0.68), among control group and pyraclostrobin-exposed groups in both concentrations present in diets (5 ppb and 25 ppb). The mortality of the dimethoate was higher than expected by the LD50 of 72 hours, which indicate that LD50 for Africanized honeybee is different that described for European honeybee. However, although the tested concentrations have no effect on the mortality tax during larval phase, it is necessary to observe their effects on the pupa stages, as well as the emergence and its longevity of the imago.

SP111 Effects of different glyphosate formulations on the morphology of the livebearing Jenynsia multidentata.

J.A. albañil sánchez, Universidade Federal do Rio Grande FURG / Aquatic Ecotoxicology; L.A. Romano, M.d. Klosterhoff, Universidade Federal do Rio Grande FURG; C.D. Martins, PhD. student / Instituto de Ciências Biológicas

Roundup® is the most widely glyphosate-based herbicides used in the world. The mode of action of glyphosate as herbicide is the inhibition of EPSPS, a key enzyme involved in the biosynthesis of essential amino acids in plants. However, recent studies have shown that glyphosate can affect animal species, considered as non-target. In this context, the objective of this study was to analyze and compare the effects of different glyphosate-based formulations, Roundup Original® (RO), Roundup Transorb® (RT) and Roundup WG® (RWG) on morphological aspects of gill, liver and brain of the livebearing *Jenynsia multidentata*. Fish (males and females) were exposed (24 and 96 h) to 0.5 mg.L-1 of glyphosate in the three formulations, which were calculated based on the concentration of glyphosate present in each formulation. Previous results showed that 0.5 mg.L-1 of glyphosate do not cause death in *J. multidentata*, regardless of whether the formulation is RO, RT or RWG. Among the histopathological damages, fatty degeneration, glial proliferation and lamellar hyperplasia were the most prominent alterations observed in the liver, brain and gills, respectively. These lesions were quantified using a histopathological index to assess aquatic pollution. In general, the tissues from fish exposed to the herbicides (RO, RT and RWG) showed significantly higher lesions in relation to the control group (non-exposed to glyphosate). The histopathological severity and the affinity for a particular organ (gills, liver and brain) vary between RO, RT and RWG formulations and between males and females. The RWG and RT were worst than RO. Also, the degree of lesions increased over the time of exposure (24 to 96 h). In the case of the brain, RT caused more severe lesions. In the liver, lesions were more evident in fish exposed to RWG and females were more affected than males; and finally, in the gills, RT and RWG formulations were more harmful than RO for both genders. Considering results presented here, RT and RWG are of greater risk. Moreover, mechanisms of toxicity also seem to be different between formulations and possibly it is linked to their compounds other than glyphosate. *J. multidentata*is supported as a good bio-monitor species that inhabits regions of irrigated rice plantations in Rio Grande do Sul / Brazil, where tons of Roundup® herbicides are released every year. The experiments were approved by CEUA / FURG (23116.005051/2013-59). CNPq Proc. 449695/2014-0

SP112 Fish Embryo Toxicity Test (FET) to evaluate atrazine effects

G.d. Martini, University of Sao Paulo - USP / CQMA; w. viveiros, CETESB - Companhia Ambiental do Estado de São Paul / setor de ecotoxicologia aquática; D.D. França, CETESB Companhia Ambiental do Estado de São Paulo / ELTA; G. Quinaglia, CETESB - Companhia Ambiental do Estado de São Paul / ELTA; C.C. Raimundo, Chemistry Institute - University of Campinas / Química Analitica; M.V. Lopes-Ferreira, Instituto Butantan / Laboratório de Toxinologia Aplicada; S.O. Rogero, J.R. Rogero, Universidade de Sao Paulo / Instituto de Pesquisas Energéticas e Nucleares

Surface water samples from São Paulo state were collected to perform Bioluminescent Yeast Estrogen Screen (BLYES) and chemical analyses (LC-MS/MS). Results showed environmental concentrations of atrazine from 2 to 43 ng L^{-1} on chemical analyses. Some studies have been performed to evaluate toxic effects on non-target organisms (fish) using herbicides such as Atrazine, a moderately toxic compound classified as an endocrine disrupting chemical (EDC) that can affect reproduction of several aquatic organisms with a compromise of vitellogenin production. To determine toxicity on embryonic stages of fish to different environmental chemicals and waste water, Fish Embryo Toxicity Test (FET) was designed using *Danio rerio* as model specie on this test, according to OECD 236 or ISO 15088 protocols, however these protocols observe only acute toxicity based on endpoints such as coagulated eggs, non-detachment of the tail, lack of heart beating and lack of somite formation. Some abnormalities can be recorded after the exposure on FET test but they are not considered as endpoint, neither any other compromised biomarker by EDC action. In order to evaluate the possibility of using these chronic endpoints and to verify if those environmental concentrations of atrazine are ecologically relevant, compromising reproductive aspects, FET test using *Danio rerio* were performed to assess lethal concentrations, sublethal concentrations and vitellogenin quantification after atrazine exposure. Occurrence of morphological abnormalities (microcephaly, spine curvature, edema, reduced size) and mortality of the embryos were determined exposing 20 fertilized eggs to atrazine concentrations from 2 to 64 mg L^{-1}. The LC50 and EC50 were obtained after 96 hours of exposure. Organisms that survived each concentration were frozen to further vitellogenin quantification. Preliminary average concentrations obtained (LC 50; 96h= 48.15 mg L^{-1} and EC 50; 96h= 27 mg L^{-1}) were considerably higher than concentrations observed on environmental samples. Therefore, surface water concentrations would not cause mortality or deformity in fish emphasizing the necessity to observe possible effect on vitellogenin concentration. Data will be analyzed and compared with the environmental concentration of atrazine to stablish the potential application of vitellogenin as endpoint on FET test. Keywords: Fish Embryo Toxicity Test, Atrazine, BLYES, Vitellogenin, *Danio rerio*

SP113 Hexachlorobenzene biodegradation by P. castanella during soil growth

S.L. Moreira Neto, Botanic Institute of the Environment Secretary of the state of São Paulo; N. Ballaminut, Facldade União de Goyazes; G.D. Coelho, Federal University