Research Notes

New record on novel hosts for the Drosophilid pest *Zaprionus indianus.*

Castrezana, S. Department of Ecology and Evolutionary Biology, University of California, Los Angeles, CA.

Few species in the Drosophilidae family are known as an active pest on commercial crops (Vilela 1999). One species, *Zaprionus indianus* Gupta, 1970, is recognized as a worldwide pest. Lachaise and Vilela (1983) reported that *Z. indianus* breeds on fallen fruits or fruits on the trees from 74 species in 31 plant families on the African continent. On the other hand, Brazil was the first country in the American continent where *Z. indianus* was collected. In this country, *Z. indianus* caused a substantial commercial damage in orange, peach, and fig orchards (Santos *et al.*, 2003). It seems that *Z. indianus* colonized the entire American continent from Brazil in less than seven years (Castrezana, 2007a). In 2005, the Division of Plant Industry from the Florida Department of Agriculture & Consumer Service issued a pest alert for the presence of *Z. indianus* in several commercial orchards like guava, pond apple, Barbados cherry, cashew, pomegranate, orange, and grapefruit among others (Steck, 2005; Van Der Linde *et al.,* 2006). Nevertheless, Van Der Linde *et al.* (2006) point out that *Z. indianus* may play a major stress factor in local Drosophilid species.

In 2010, our team went to collect *Drosophila* at the tropical deciduous forests in the cape region of Baja California. We were looking for *D. mojavensis* (Patterson 1940) and *D. spenceri* Patterson 1943. *Drosophila spenceri* is a species from the longicornis complex in the mulleri subgroup of the repleta group. The distribution of this Mexican endemic Drosophilidae species encompasses the northwest thorn forest (Sonora and Sinaloa), the Pacific coastal plain (Jalisco, Michoacán, Guerrero, and Oaxaca), the driest central Mexico low lands (Nuevo León, San Luis Potosí, Morelos, and Puebla), and the deciduous forest of the Baja California Sur. The cactus *Pachycereus pectin- aboriginum* (cardón barbón) is the known host for *D. spenceri.* Nevertheless, this *Drosophila* species can use other columnar cacti in the subfamily Pachycereeae like *Carnegiea gigantea* (saguaro), *P. pringlei* (cardón), *P. weberi* (candelabro), *Stenocereus quevedonis* (Pitire), *S. thurberi* (pitaya dulce), *Ferocactus cylindraceus* (California barrel), and *F. emoryi* (Sonoran barrel) (Oliveira *et al.,* 2005).

In my previous field trips to Baja (1995-2003), regardless the season, *D. spenceri* was a frequent species on banana baits at the cape area (Castrezana, 2007b). In addition, I was collecting *D. spenceri* larvae from rotten material and fruits of *P. pringlei* and *P. pecten.* Nevertheless, in June 2010, the temperature in Cape area was over the normal, 42^{o}C @ 12:00 at noon. In addition, the fruit season for *P. pecten* was almost at its end. Despite these problems, our team set up over 15 banana baits along the eastside of the Cape area road (see Markow and O'Grady, 2006, for bait description). We collected more than 2,000 flies. Unfortunately, *D. arizonae* Ruiz, Heed and Wasserman, 1990 was the most abundant species in the collection (catalog number 15081-1271.34A *Drosophila* Species Stock Center). Just about 10% of the flies collected were *D. simulans* Sturtevant 1919 (catalog number 14021-0251.280A in the DSSC) and *D. melanogaster* Meigen 1830; only three *D. mojavensis* females were collected. We didn't find *D. spenceri* on the banana baits.

On the other hand, on the road to the Santa Rosa Town, we visited an area called the cactus sanctuary (23.772837N;-110.132039W). In this area, we found abundant ripened fruits of *P. pecten*, both in the plants and on the ground. Also, we located several *P. pecten* plants with rotten sections. I

recognized Drosophilid larvae in these material pieces. In addition, we got pitaya dulce fruits (*S. thurberi*) with Drosophilid larvae at the San Antonio town (23.800903, -10.109672). So, we took fruits and rotten material samples to the lab. I anticipated that these larvae could be *D. spenceri* and *D. mojavensis.*

Once in the lab, I saw with surprise that pupae had a reddish-brown color without clear horns. When adults emerged, I positively identified the species as *Z. indianus*. Surprisingly, *Z. indianus* didn't arrive to the banana baits. This note is the first report of *Z. indianus* using cacti fruits and rotten cactus tissue. So, I suspect *Z. indianus* could potentially detoxify some of the alkaloids present in the tribe Pachycereeae and if it is not competing, at least *Z. indianus* could potentially disturb some Drosophilidae desert populations.

References: Castrezana, S., 2007a, Dros. Inf. Serv. 90: 34-36; Castrezana, S., 2007b, Dros. Inf. Serv. 90: 23-24; Lachaise, D., and L. Tsacas 1983, In: *The Genetics and Biology of* Drosophila. (Ashburner, M., H.L. Carson, and J.N. Thompson, jr., eds.). Academic Press, London; Markow, T.A., and P.M. O'Grady 2006, Drosophila, *A Guide to Species Identification and Use*. Academic Press; Santos, J.F., T.T. Rieger, S.R.C. Campos, A.C.C. Nascimento, P.T. Felix, S.V.O. Silva, and F.M.R. Freitas 2003, Dros. Inf. Serv. 86: 92-95; Oliveira, D.C.S.G., P.M. O' Grady, W.J. Etges, W.B. Heed, and R. DeSalle 2005, Zootaxa 1069: 1-32; Steck, G.J., 2005, http://www.doacs.state.fl.us/pi/enpp/ento/zaprionusindianus.html; Van Der Linde, K., G.J. Steck, K. Hibbard, J.S. Birdsley, L.M. Alonso, and D. Houle 2006, Florida Entomologist 89(3): 402-404; Vilela, C.R., 1999, Dros. Inf. Serv. 82: 37-39.

Effect of Cyclophosphamide on *hsp70* expression in transgenic *Drosophila melanogaster* (*hsp-70*-lacZ) Bg^9.

Siddique, Yasir Hasan, Gulshan Ara, and Mohammad Afzal. Drosophila Transgenics Laboratory, Section of Genetics, Department of Zoology, Faculty of Life Sciences, Aligarh Muslim University, Aligarh, U.P., 202002, India; Email: yasir_hasansiddique@rediffmail.com.

Abstract

In the present study the effect of 0.0035, 0.025, 0.050, 0.10, and 1 µl/ml of cyclophosphamide (CP) was studied on the 3rd instar larvae of transgenic *Drosophila melanogaster* (*hsp70*-lacz) Bg^9 for 6, 24, and 48 hr durations. The treatment of 0.0025 µl/ml of CP did not induce significantly the activity of *hsp70* as compared to control. The treatments of 0.025, 0.050, 0.10, and 1 µl/ml of CP induced a significant increase in the activity of *hsp70* for the different duration of exposure. The results of the present study suggest that the doses of 0.025, 0.050, 0.10, and 1 µl/ml are cytotoxic in the 3rd instar larvae of transgenic *Drosophila melanogaster* (*hsp70*-lacZ) Bg^9.

Introduction

Cyclophosphamide is an alkylating agent (Ren *et al.,* 1998). It is used as a chemotherapeutic agent to treat various forms of leukemia (Shanafelt *et al.,* 2007) and tumors (Young *et al.,* 2006). It