

Table 2. Kendall's rank correlations between SHS phenotypes and UV-C resistance across RIL. Trait abbreviations are as in Table 1.

SHS-A-AC - SHS-A-NA	-0.62*
SHS-A-AC - UV-C	-0.33
SHS-A-AC - SHS-L-AC	-0.04
SHS-A-AC - SHS-L-NA	-0.05
SHS-A-NA - UV-C	0.33
SHS-A-NA - SHS-L-AC	0.05
SHS-A-NA - SHS-L-NA	0.24
SHS-L-AC - SHS-L-NA	0.62*
SHS-L-AC - UV-C	0.33
SHS-L-NA - UV-C	0.71*

\* $P < 0.05$ .

Molecular Ecology 13: 3585-3594; Norry F.M., P. Larsen, Y Liu, V. Loeschcke 2009, Journal of Insect Physiology 55: 1050-1057; Norry, F.M., A.C. Scannapieco, P. Sambucetti, C.I. Bertoli, V. Loeschcke 2008, Molecular Ecology 17: 4570-4581.

(Norry *et al.* 2009), and the present results suggest that larvae may not share these QTL as no genetic correlation was significant for SHS between larvae and adults (Table 2). A QTL mapping for SHS in acclimated and non-acclimated larvae and adults is in progress to determine what thermotolerance QTL are specific for each life stage in this set of RIL.

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**References:** Hoffmann, A.A., J.G.. Sørensen, V. Loeschcke 2003, Journal of Thermal Biology 28: 175-216; Morgan, T.J., and T.F.C. Mackay 2006, Heredity 96: 232-242; Norry, F.M., J. Dahlgaard, V. Loeschcke 2004,



### **Drosophilid species collected from Nainital and Almora district, Kumaon region, India.**

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The Drosophilidae is a large family of world-wide distribution. From the literature it seems that the Drosophilidae are fairly widely distributed throughout the subcontinent of India (Gupta, 1981, 1985). Studies on Indian Drosophilidae were started as early in 1920, but still a large part of sub continent awaits exploration. In recent years our studies in Kumaon region (Singh and Bahtt, 1988; Singh and Negi, 1989, 1992; Singh and Das, 1993, 1994, 1998; Singh and Fartyal, 1997, 1998; Fartyal and Singh, 2000, 2001, 2002; Fartyal, Singh, and Toda, 2005; Upadhyay and Singh, 2006), which is located at an elevation of just below 2000 m altitude on the north east periphery of the state of Uttarakhand. This region includes six border districts of the state, *viz.* Nainital, Almora, Pithoragarh, Bageshwar, Champawat, and Udham Singh Nagar. The present collection was made from Kilburry, Kailakhan, Khrishnapur, Sariatal, Anyarpata, Pines, Lariakanta, Hanuman Gari, Pangote, Bhatelia, Sheetla, Lesal, and Mukteshwar in Nainital district and Chaubatia forest (Ranikhet) in Almora district.

Several traps, usually small tin containers containing fermenting banana, guava, and some other local fruits were placed at different places under cool and shady areas. Flies were obtained by net sweeping over these traps as well as by sweeping over natural habitat. In order to procure the maximum number of flies, collection were made several times during the day. The collected flies were then transferred to culture vials containing *Drosophila* food medium for raising their progeny. The rest were preserved in 70% alcohol for further study.

Table 1. Genus/Subgenus, Collection locality and No. of flies collected.

Genus/Sub genus	Collection locality	No. of flies collected
Genus- <i>Drosophila</i>		
Sub-genus- <i>Drosophila</i>		
1) <i>Drosophila repleta</i>	Krishnapur, Kilburry, Sariatal, Anyarpata, Hanuman garhi, Bhatelia, Sheetla, Chaubatia forest	1000
2) <i>Drosophila immigrans</i>	Krishnapur, Kilburry, Sariatal, Anyarpata, Hanuman garhi, Bhatelia, Sheetla, Lesal, Chaubatia forest	1200
3) <i>Drosophila sulfurigaster</i>	Krishnapur, Sariatal, Anyarpata, Hanuman garhi, Bhatelia, Chaubatia forest	200
4) <i>Drosophila lacertosa</i>	Krishnapur, Sariatal, Anyarpata, Hanuman garhi, Bhatelia, Chaubatia forest, Lesal	300
5) <i>Drosophila species*</i>	Krishnapur, Sariatal, Anyarpata, Hanuman garhi, Mukteshwar	50
6) <i>Drosophila species*</i>	Chaubatia forest, Lesal, Kilburry	50
7) <i>Drosophila species*</i>	Chaubatia forest, Kilburry	20
8) <i>Drosophila species*</i>	Kilburry, Sariatal, Anyarpata, Hanuman garhi, Mukteshwar	55
9) <i>Drosophila species*</i>	Kilburry, Sariatal, Anyarpata, Chaubatia forest	75
10) <i>Drosophila species*</i>	Kilburry, Sariatal, Anyarpata, Chaubatia forest	35
Sub-genus- <i>Dorsilopha</i>		
11) <i>Drosophila buscki</i>	Krishnapur, Kilburry, Sariatal, Anyarpata, Hanuman garhi, Bhatelia, Sheetla, Lesal, Chaubatia forest	1500
Sub-genus- <i>Sophophora</i>		
12) <i>Drosophila nepalensis</i>		1500
13) <i>Drosophila suzukii</i>	Krishnapur, Kilburry, Sariatal, Anyarpata, Hanuman garhi, Lesal, Chaubatia forest, Mukteshwar	1000
14) <i>Drosophila melanogaster</i>	Krishnapur, Kilburry, Sariatal, Anyarpata, Hanuman garhi, Lesal, Chaubatia forest	500
15) <i>Drosophila jambulina</i>	Krishnapur, Sariatal, Anyarpata, Hanuman garhi, Chaubatia forest	150
16) <i>Drosophila takahashii</i>	Krishnapur, Sariatal, Anyarpata, Hanuman garhi, Bhatelia, Sheetla, Lesal, Chaubatia forest	700
17) <i>Drosophila punjabiensis</i>	Krishnapur, Sariatal, Anyarpata	300
18) <i>Drosophila species*</i>	Krishnapur, Anyarpata, Kilburry	50
19) <i>Drosophila species*</i>	Krishnapur, Anyarpata, Kilburry	20
20) <i>Drosophila species*</i>	Sariatal, Anyarpata, Kilburry	30
Genus- <i>Hirtodrosophila</i>		
21) <i>Hirtodrosophila species*</i>	Anyarpata, Sariatal	15
Genus- <i>Leucophenga</i>		
22) <i>Leucophenga bellula</i>	Krishnapur, Kilburry, Sariatal, Anyarpata, Hanuman garhi, Lesal, Chaubatia forest	250
23) <i>Leucophenga clubiata</i>	Krishnapur, Kilburry, Sariatal, Anyarpata, Hanuman garhi, Lesal, Chaubatia forest	250
24) <i>Leucophenga angulata</i>	Krishnapur, Sariatal, Anyarpata, Hanuman garhi, Chaubatia forest	200
25) <i>Leucophenga species*</i>	Chaubatia forest	20
26) <i>Leucophenga species*</i>	Anyarpata, Hanuman garhi	30
27) <i>Leucophenga species*</i>	Krishnapur, Sariatal	25
28) <i>Leucophenga species*</i>	Anyarpata	15
29) <i>Leucophenga species*</i>	Anyarpata	10
30) <i>Leucophenga species*</i>	Sariatal	15
31) <i>Leucophenga species*</i>	Kilburry, Anyarpata	25
32) <i>Leucophenga species*</i>	Kilburry, Chaubatia forest	30
33) <i>Leucophenga species*</i>	Kilburry, Kailakhan	20
34) <i>Leucophenga species*</i>	Chaubatia forest	15
35) <i>Leucophenga species*</i>	Mukteshwar, Bhatelia	5
36) <i>Leucophenga species*</i>	Lesal, Sheetla	25
37) <i>Leucophenga species*</i>	Lesal, Sheetla	10
Genus- <i>Scaptodrosophila</i>		
38) <i>Scaptodrosophila species*</i>	Kilburry, Anyarpata	20
39) <i>Scaptodrosophila species*</i>	Anyarpata	15
40) <i>Scaptodrosophila species*</i>	Sariatal, Anyarpata	10
Genus- <i>Zaprionus</i>		
41) <i>Zaprionus indianus</i>	Anyarpata, Sariatal, Mukteshwar, Chaubatia forest	600
Total		10340

Note:- The species marked with \* were not identified and are supposed to be new species.

A total of about 10,340 flies belonging to different genera of family Drosophilidae were collected since July 2006 to July 2009 (Table 1). Our observations show that the members of Drosophilidae are fairly distributed in these areas. Some of the species, viz, *Drosophila immigrans* and *Drosophila nepalensis*, have marked preference to the colder climate. Besides known species, some species of Drosophilidae were not identified and are supposed to be new species.

References: Gupta, J.P., 1981, Dros. Inf. Serv. 56: 50; Gupta, J.P., 1985, Dros. Inf. Serv. 6: 86; Singh, B.K., and M. Bhatt 1988, Oriental insects 22: 147-161; Singh, B.K., and N.S. Negi, 1989, Proc. Zool. Soc. Cal. 40: 19-26; Singh, B.K., and N.S. Negi, 1992, Senckenbergiana Biol. 72: 321-327; Singh, B.K., and S. Das 1993, Proc. Zool. Soc. Cal. 46 (2): 11-140; Singh, B.K., and S. Das 1998, Proc. Zool. Soc. Cal. 51: 45-56; Singh, B.K., and R.S. Fartyal 1997, Dros. Inf. Serv. 80: 43; Singh, B.K., and R.S. Fartyal 1998, Dros. Inf. Serv. 81: 160-161; Fartyal, R.S., and B.K. Singh 2000, Dros. Inf. Serv. 83: 58; Fartyal, R.S., and B.K. Singh 2001, Dros. Inf. Serv. 84: 30; Fartyal, R.S., and B.K. Singh 2002, Proc. Zool. Soc. Cal. 51(1): 11-18; Fartyal, R.S., B.K. Singh, and M.J. Toda 2005, Ent. Sc. 8: 405-417; Upadhyay, K., and B.K. Singh 2006, Proc. Zool. Soc. Cal. 59(2): 67-70.

Wild stocks of Drosophilidae:

1. *Drosophila immigrans*
2. *Drosophila buscki*
3. *Drosophila nepalensis*
4. *Drosophila melanogaster*
5. *Drosophila repleta*
6. *Drosophila jambulina*
7. *Drosophila takahashii*
8. *Zaprionus indianus*



**Coomassie Brilliant blue dye toxicity screen using *Drosophila melanogaster* (Diptera - Drosophilidae).**

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## Abstract

Synthetic dyes are often found among the wastewater. Among the chromogenic groups, the most common is the azo type, like RBBR (Remazol Brilliant Blue R or Reactive Blue 19). In the family of brilliant blue some of them are used as colorants in textile and leather, others are biochemically relevant dyes commonly used in laboratories for protein determination and gel electrophoresis. Little is known about the health risks of most anthraquinone dyes, motivating us to evaluate the toxicity of Coomassie Brilliant Blue (CBB) using *Drosophila melanogaster* as an insect model. This work investigated the long-term toxic effects of continuous and single exposure of