

Thesis Title                    Studies on Karyotype of some Species of  
   *Dacus* in Thailand.  
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#### ABSTRACT

Four species of *Dacus* (*D. corectus*, *D. dorsalis*, *D. tau* and *D. cucurbitae*) were studied cytologically using Giemsa staining, Hoechst-33258 staining and C-banding techniques.

These four species show uniform mitotic karyotype ( $2n=12$ ) consisting of 5 pairs of autosomes and one pair of sex chromosome (XX/XY). The Y chromosome is small a submetacentric in all four species. The X chromosome of *D. correctus* is a small metacentric compared with the medium metacentric X chromosome of the other three species. All four species have metacentric chromosome 2 and submetacentric chromosome 5. Chromosome 3 is submetacentric in *D. dorsalis* compared with the metacentric shape of the other three species. Chromosome 4 is submetacentric in *D. cucurbitae* compared with the metacentric configuration of the others.

Chromosome 6 is a submetacentric shape in *D. correctus* and *D. dorsalis*, but it is a metacentric configuration in *D. tau* and *D. cucurbitae*.

*D. correctus* shows negative H-band in the X chromosome while that of *D. dorsalis*, *D. tau* and *D. cucurbitae* exhibits positive H-band of approximately 38.74 %, 94.01 % and 87.35 % respectively. Conversely, the Y chromosome of *D. correctus* shows positive H-band of 38.50 % while it is negative in *D. dorsalis*, *D. tau* and *D. cucurbitae*. The autosomes of *D. correctus* shows 31.99-43.00 % of pericentric positive area while those of *D. dorsalis*, *D. tau* and *D. cucurbitae* show only 0.03-16.50 % of pericentric H-band. Total H-band positive areas of *D. correctus*, *D. dorsalis*, *D. tau* and *D. cucurbitae* are 35.32 %, 8.32 %, 11.62 % and 13.87 % in male and 33.40 %, 9.59 %, 16.71 % and 16.87 % in female respectively.

*D. correctus* shows the C-band positive area of approximately 4.58 % in the X, 89.72 % in Y and 30.28-41.00 % in each autosome. Total C-band areas of male is 35.68 % and of female is 34.17 %. In *D. dorsalis*, the C-band positive areas in chromosomes X and chromosome Y is 53.04, 38.51 % respectively. *D. tau* shows 94.85% positive C-band area in the X and 74.59 % in the Y. *D. cucurbitae* shows 88.63 % positive C-band area in the X and 79.87 % in the Y. Total C-banded positive areas of *D. dorsalis*, *D. tau* and *D. cucurbitae* are 15.11 %, 19.91 % and 18.67 % in male and 17.38 %, 23.31 % and 21.17 % in female respectively.

The four species can be separated by a combination of staining techniques. Base on cytological evidence, *D. correctus* is quite different from *D. dorsalis* although they are morphologically belonging to the same subgenus. *D. tau* and *D. cucurbitae* apparently closer relationship than the other two species. Thus cytological evidence seems to be in accordance with the Drew's classification and Grewal and Kapoor's suggestion that *D. cucurbitae* and *D. tau* belongs to the same subgenus, *Zeugodacus*.