A SMEAR METHOD FOR MAKING PERMANENT MOUNTS OF THE METAPHASE CHROMOSOMES IN EGGS OF PHYTOSEIID MITES (ACARINA:MESOSTIGMATA) *

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Until now cytological investigations of Acarina employed histological preparations or squashed tissues. The former was carried out using post fixation in Fleming's, Navashin's or Bouin's fixative with iron hematoxylin (Heidenhain's method), or Feulgen's method and hematoxylin (Sokolov, 1954, Gorostchenko, 1962); temporary squash preparations were implemented with acetoorcein (Kahn, 1964; Oliver, 1966). All these methods were used for the examination of gonads in Acarina. Cytological studies of eggs (Oliver & Nelson, 1967; Helle & Bolland, 1967) and of phytoseiid ova (Hansel et. al. , 1964,
Treat, 1965) were based on squash preparations.

In most squash methods, temporary mounts are made, and only a few are exchanged for permanent preparations, which are made as follows: a) by means of dry ice and permanent closing with a mounting fluid; b) by adding a fast green/propionic-acid mixture under the cover slip which allows removal of this slip, then applying a drop of balsam/propionic-acid mixture and finally placing a new cover slip on the tissue. Part of the tissue adheres to the previous cover slip and on this a drop of balsam/proprionic-acid mix- ture is placed and the preparation is closed (Oliver, 1966). Removal of Kronig's wax also may mar the preparation and the long exposure of the tissue to acetoorcein may produce overstaining.

The method described below is considerably simpler. A single egg is deposited in the middle of the slide close to one of the shorter edges. A drop of modified Carnoy-Lebrun's fixative (1 : 1 : 1 , glacial acetic acid, chloroform, absolute ethyl alcohol) without mercuric chloride is put on the egg and the edge of the cover slip drawn along the long axis of the slide as usual for smears.
The preparation is dried for 1/2 to 1 minute in a stream of hot air (a hair drier is adequate for this purpose) and then stained in a horizontal position for 35 - 40 minutes with Fluka acetoorcein 1%. After dehydration with 70%, 96% and absolute ethanol, the preparation is closed with Euparal. After a final drying the mounts may be stored vertically.

Figures I and 2 illustrate the chromosomes of Amblyseius hibisci and Figs. 3 & 4. of A. swirskii from permanent mounts.

The method described thus allows direct and rapid preparation of permanent mounts of phytoseiid eggs, thereby making it possible to defer the study of large numbers of slides.

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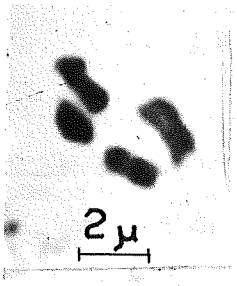


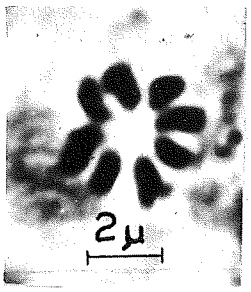
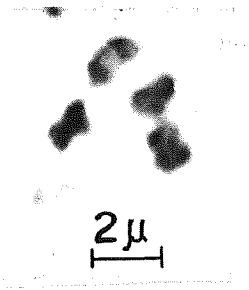


Fig. 1,2 Amblyseius hibisci metaphases
n = 4,2 n = 8



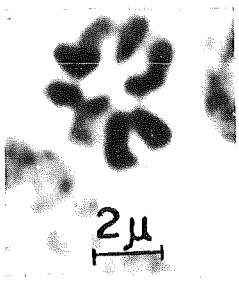


Fig. 3,4 Amblyeseius swirskii metaphases
n = 2,2 n = 8 Enlargement about
5000 x. Wild microscope, phase contrast.