

Techniques for Preservation of Genitalia of Spiders for Taxonomic Study

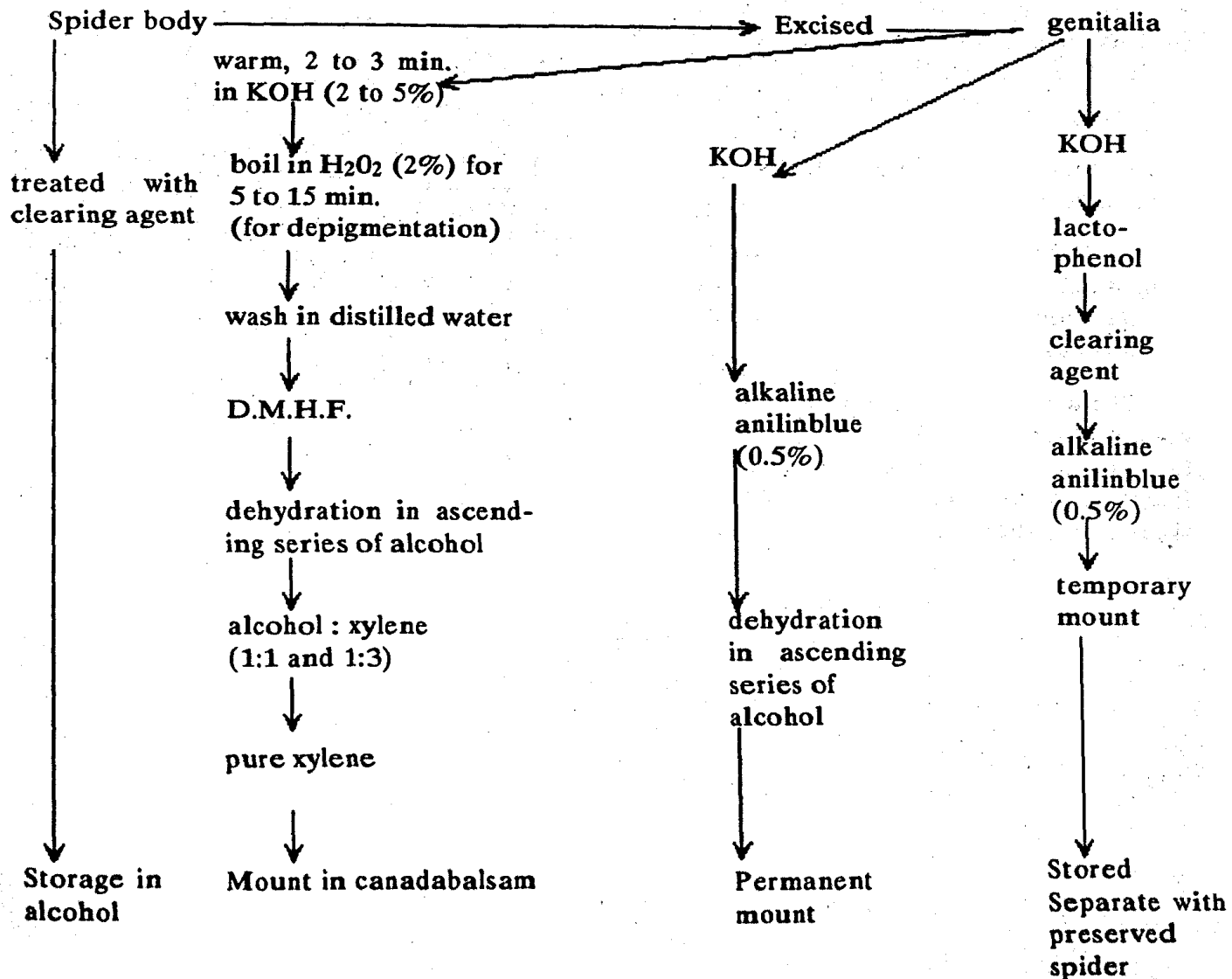
S.K. PATEL

Department of Life Sciences, Bhavnagar University
Bhavnagar - 364 002

Spiders play an important role as predators in natural bio-control of insect pests. The study of spider genitalia for taxonomic purposes demands good preservation techniques. Spiders are normally preserved in 70% alcohol (Levi, 1966) con-

taining 1% glycerine to prevent evaporation. Besides, phenol is added to prevent fungal growth. A more advantageous preservative is the aqueous solution of 1 to 2 % propylene phenoxytol (Owen and Steedman, 1956), routinely used in museums and institutions,

Chart 1. TECHNIQUES FOR STUDY OF SPIDER GENITALIA



which serves as narcotic and bactericidal agent and is used for storage. The specimen must be fixed in 70% alcohol overnight before keeping in propylene phenoxytol. It is valuable to use in pit-fall traps.

The other important preservative (Prior, 1964) is a mixture of higher alcohols that solidify at room temperature. It is more suitable for tiny parts like palps, epigynum, labium etc. For sending the specimens by post this is a very useful preservative. If the spiders get dried, which happens quite often with alcohol, such specimens can be restored back to the original state by the method of Van Cleave and Ross (1947), in which the dried spiders are immersed for 24h, in tri-sodium phosphate (Na_3PO_4) with 0.5% concentration in distilled water, preferably at 35°C. The genitalia which are mostly dark and deeply pigmented are made transparent by a special technique (Komatsu and Yaginuma, 1968) which enables observation of spermathecae, ducts and relative structures.

For taxonomic identification, the study of epigynum and interal genitalia (vulva) of female spiders is essential. The following method has been found suitable.

The whole spider or only the epigynum is macerated in hot KOH (2 to 5%) or cleared in clove Oil, beechwood creosote, phenol or lactophenol to remove the muscles and soft tissues. It is then stored in alcohol. For better

microscopic observation, the genitalia are treated with mountant resin dimethyl hydantoin formaldehyde (D.M.H.F.), which is colourless, miscible in water as well as in alcohol and does not shrink. It clears the cuticle, perfectly. The cleared material is stained, dehydrated and made permanent as shown in chart - 1.

ACKNOWLEDGEMENT

The author is thankful to Prof. H.C. Dube, Prof. and Head, Department of life Sciences, Bhavnagar University, Bhavnagar for encouragement.

KEYWORDS : Spider genitalia, preservation technique

REFERENCES

- KOMATSU, T. and YAGINUMA, T. 1968. A new method for the observation of the spider genitalia. *Acta. Arachnologica*, 21, 34.
- LEVI, H.W. 1966. The care of alcoholic collection of small invertebrates. *Systematic Zool.*, 15, 183.
- OWEN, G. and STEEDMAN, H.F. 1956. Preservation of animal tissues with a note on staining solutions. *Quart. J. Microsc. Sci.*, 97, 319.
- PRIOR, R.N.B. 1964. Two new techniques used in leaf hopper taxonomy which may also be applicable to other orders of small insects requiring maceration and partial dissection. *Ent. Mon. Mag.*, 100, 246.
- VAN CLEAVE, J. and ROSS, J.A. 1947. A method of reclaiming dried Zoological specimens. *Science*, 105, 318.