식물학회지 제28권 제 4 호
Korean J. Bot. 28(4): 329-332 (1985)

Short Communication

A New Material for Rapid and Easy Method of Plant Surface Imprinting

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ABSTRACT

A simple new device for obtaining very clear epidermal imprints for light microscopic studies is discussed. This new device is developed from "Britfix" (polystyrene cement) which is non-toxic to the plant organs. It involves direct application of the material on the desired surface of the plant organ to obtain thin, transparent replica. From the present investigation "Britfix" is found to be useful for the study of epidermal anatomy, morphology and physiology. Epidermal imprints can be mounted on the microscope slide without a mounting medium. Permanent slide of these imprints can be kept for any desired period without any deterioration of the replica.

INTRODUCTION

The present day methods to study the leaf epidermis involve clearing and maceration techniques (Pohl 1967, Shobe 1967). Zelitch (1961) and Sampson (1961) developed a technique of taking surface imprinting by using silicon rubber latex. Horanic and Gardner (1967) used "Roplex AC-3" a product of Rohm and Haas Company to take better epidermal imprints. Patel (1968) developed surface replicas by using mucilage from raw fruits of *Coccinia grandis* (L.) J.O. Voight. Various domestic adhesives were used by Inamdar and Patel (1969) for taking epidermal imprints. Later Inamdar *et al.* (1970) could prepare sectional and surface replicas using domestic adhesives, latex and various plant mucilage. Recently Inamdar *et al.* (1976) developed a device to take surface imprinting by gruel. Bhat *et al.* (1976) obtained epidermal replicas by using Maida-a fine wheat flour. Recently Yunus (1982) also obtained replicas by using Elmer's glue.

MATERIAL AND METHODS

The present technique of taking surface replicas of vegetative as well as reproductive organs involves using "Britfix" (a polystyrene cement) made by Humbrol, Hull, England. This material is non-toxic and easily available in covenient small metalic tubes. The plant materials from which the surface imprints are to be taken are properly cleaned in running

tap water and then washed in distilled water to remove the exotic particles from the epidermis. The materials are dried under room temperature (28°C) to remove the water particles from the surfaces. Care should be taken to see that the materials are not over dried or wilted. After the material is properly dried the "Britfix" is applied uniformly on the desired plant surface with a camel hair brush.

Then it is allowed to dry at room temperature. Depending upon the room temperature, atmospheric humidity and plant material used, it takes 10~15 minutes to form a shining transparent dry film ready to be mounted. The dry film is removed off the surface by using a fine forceps and needle and placed on a dry clean microscope slide. It is then covered gently with a clean cover slip. The cover slip can be sealed on its sides by Canada balsam or DPX to prevent the entry of dust particles and make it a permanent preparation.

OBSERVATIONS

The replicas taken from different plant groups give structural details of epidermal cells, stomata, and trichomes, etc. (Fig. 1-6). The imprint can be used for morphological, anatomical and physiological observations of the different organs of a plant. It is also observed that the present material gets dried in a very short time and the film automatically comes out of the surface. Present findings of taking surface imprinting from different plant groups prove that the new material will be useful in plant morphology and physiology as repeated imprints can be taken from the same surface without causing any injury to the plant organs.

R. B. Bhat thanks the University of Ilorin, Nigeria, for prodiving Senate Research Grants.

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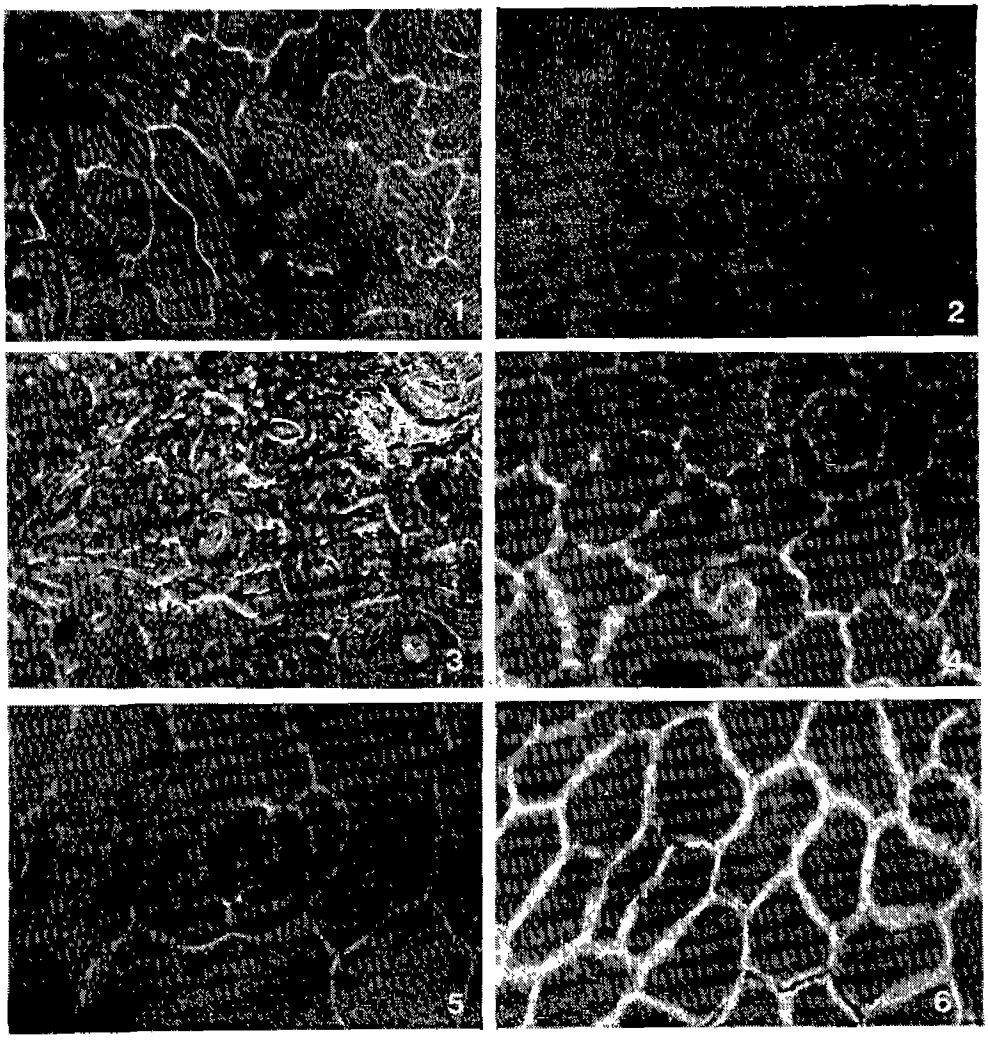

Figs. 1 to 6. Imprints obtained with 'Britfix' showing epidermal structure of leaf upper, lower and fruit surfaces.

Fig. 1. *Vernonia amygdalina*-Leaf lower showing stomata and wavy nature of epidermal walls, and cuticular striations radiating from guard cells (Scale 750:1).

Fig. 2. *Colocasia* spec.-Leaf lower showing paracytic stomata and structure of epidermal cells (Scale 750:1).

Fig. 3. *Coccinia grandis*-Anomocytic stoma on the surface of fruit and cuticular striations radiating from stoma (Scale 750:1).

Fig. 4. *Bryophyllum pinnatum*-leaf Lower showing developmental stages of paracytic stomata (Scale 750:1).

Fig. 5. *Coccina grandis*-Leaf lower showing paracytic stoma and structure of epidermal walls, (Scale 920:1).

Fig. 6. *Carica papaya*-Leaf upper showing the astomatic epidermal structure (Scale 750:1).

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(Received September 30, 1985)