

Short Communication

MODIFICATION OF SKIN SURFACE BIOPSY FOR SCANNING ELECTRON
MICROSCOPIC OBSERVATION ON SUPERFICIAL FUNGAL INFECTION

(superficial fungal infection/skin surface biopsy)

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A modified skin surface biopsy for scanning electron microscopic observation of superficial fungal infection was introduced. Our method has the following advantages which are adequate for routine ultrastructural investigation on superficial fungal infections: 1) atraumatic, 2) convenient, 3) able to obtain a wide area, and 4) minimal chance of getting artifacts.

In this short report, we introduce a new skin surface biopsy investigating superficial fungal infections by a scanning electron microscope, which was recently modified in our laboratory. Allon Alpha is cyanoacrylate, a plastic adhesive which converts from the liquid to the solid state by polymerization. When a thin film of the monomer is pressed between the surfaces of the skin and a specimen mounting block for scanning electron microscope (SEM-block), polymerization is completed in about one minute (Fig.1). On removal of the SEM-block by gentle elevation of one end, the bond separates several layers of horny cells within the stratum corneum (Fig.2). Film cases (used) are convenient to store and carry specimens on SEM-block. The bigger the SEM-blocks, the wider the obtainable areas. The films containing the specimens were fixed on the SEM-block by osmium gas for 2-3 hours, naturally dried for about 12 hours and coated with gold in ion coator with a rotating

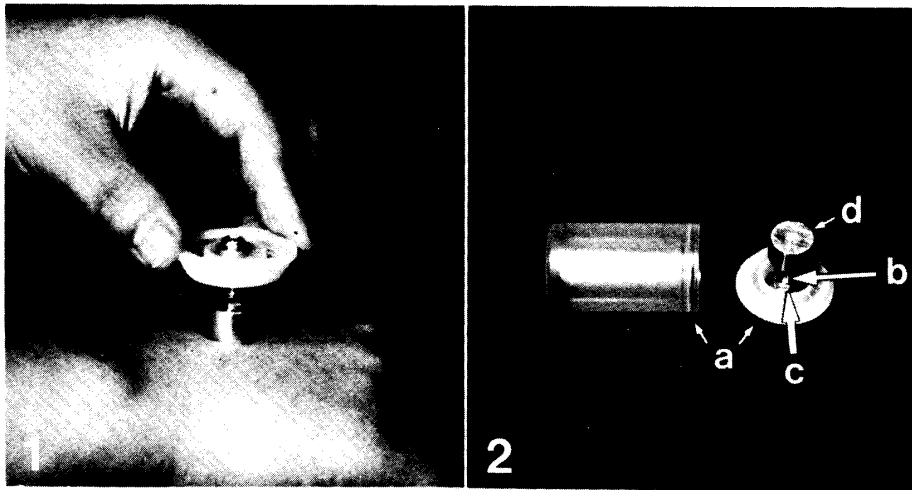


Fig. 1. Method of skin surface biopsy.

Fig. 2. Apparatus for skin surface biopsy. a. film case, b. bolt, c. nut, d. SEM-block.

stage (VX-10A, Eiko Engineering). As examples, two photographs examined on a Hitachi S-450 scanning electron microscope are presented. (Figs.3 and 4).

Despite the importance of the stratum corneum in superficial fungal infections there are still insufficient means for its adequate investigation. Stratum corneum scraped off with a scalpel (1) is destroyed in horizontal relation and may get many artifacts. Scales obtained with adhesive tape (2) are not handy for the process of scanning electron microscopic observation. Ordinary skin biopsies (3,4) are too traumatic for routine investigation and for obtaining wide areas. Skin surface biopsy (5) is the method in which cyanoacrylate adhesive strips a thin layer of horn from the skin and sticks it to glass slides. Then the glass slides need to be cut into the requisite size and mounted for scanning by an electron microscope. So it may be appreciated that our specimen taken directly from the skin on the SEM-block diminishes the chance of getting artifacts and needs no skill in glass cutting.

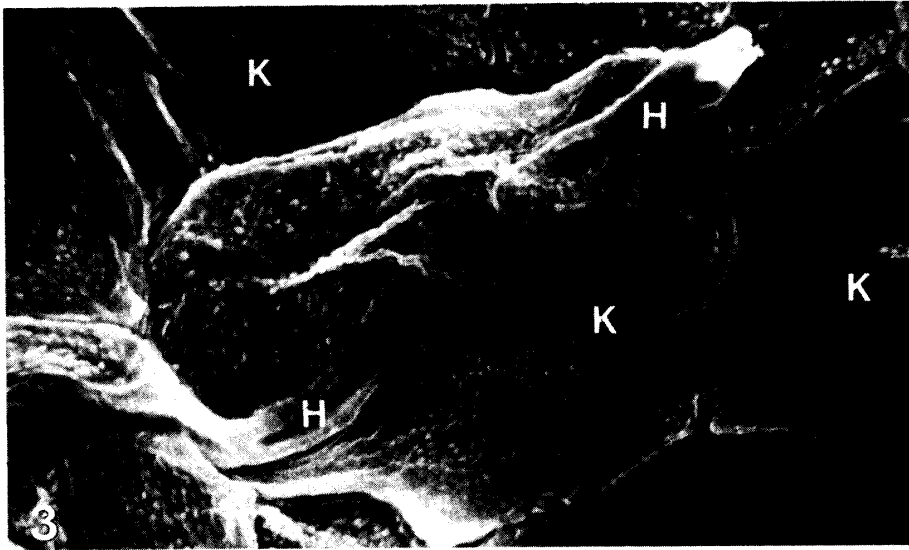


Fig. 3. Skin surface biopsy specimen from the lesion of tinea corporis. H, hyphae (Trichophyton rubrum), K, keratinocyte. X4,400.

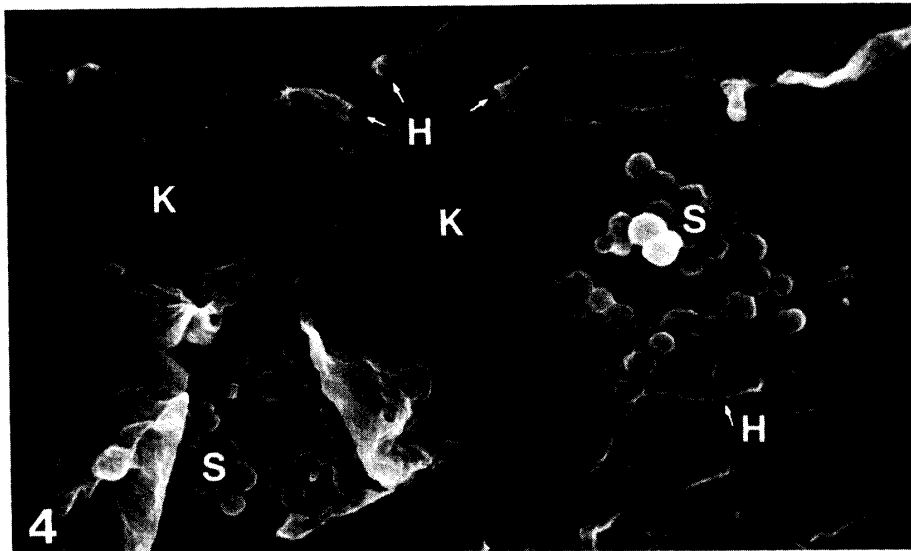


Fig. 4. Skin surface biopsy specimen from the lesion of tinea versicolor. H, hyphae, S, spores (Malassezia furfur), K, keratinocyte. X2,300.

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