

AN IMPROVED METHOD FOR THE PREPARATION OF EPIDERMAL SHEETS

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Abstract. A simple method for the preparation of epidermal sheets is described which makes use of a cyanoacrylate adhesive for impregnating the stratum corneum, prior to incubation of the tissue in the medium employed to induce separation. The method facilitates the actual process of separating the epidermis from the dermis and further handling of the sheet and also ensures ideal preservation of the tissue morphology.

Epidermal and other sheet preparations are used for a variety of research purposes and many techniques have been developed which induce separation of the epidermis from the dermis (1, 2). However, the main difficulties encountered with any of the usual methods are the actual process of separating the thin and soggy epidermis from the dermis and the subsequent handling which usually leads to distortion and traumatization of the sheet. In this report a method is presented which overcomes these difficulties and which can be used in conjunction with any of the usual techniques employed to achieve dermo-epidermal separation.

METHOD

The skin biopsy specimen from which the epidermal sheet is to be prepared is mounted on a coverslip or glass slide, the corneal surface being attached to it with a drop of a cyanoacrylate adhesive (Permabond; Permabond Adhesives & Sealants (UK), Staines, Middlesex, England). The biopsy specimen is then pressed down for 10-30 seconds until the adhesive has set. Subsequently, the coverslip with the biopsy specimen attached is transferred to a Petri dish which contains a trypsin solution or any other medium employed to induce separation (Fig. 1*a*). The mounted specimen usually floats off the coverslip, but the skin surface which is impregnated with the adhesive remains perfectly flat. After the incubation period required for the separation procedure the epidermis can be peeled off effortlessly (Fig. 1*b*) and without any distortion or injury to the sheet. The sheet can then be handled freely (Fig. 1*c*) and cut up into smaller pieces with a

scalpel or razor blade if required (Fig. 1*d*). Subsequently the sheets can be subjected to further processing without any risk of distortion.

DISCUSSION

The method described is simple, reliable and can be used in combination with any of the substances commonly employed to induce dermo-epidermal separation. It greatly facilitates the actual process of separating the epidermis from the dermis and further handling and processing. The stability of the sheet, which is due to the impregnation of the horny layer with adhesive, guarantees perfect morphological and topographical preservation of the epidermal sheet. This method does not preclude the further use of histochemical, scanning electron-microscopic (3, 4), autoradiographic or other histological methods. It is suggested that modifications of this method could be very useful in other fields of biological research where sheets of cells (5) or separation of other interfaces are required.

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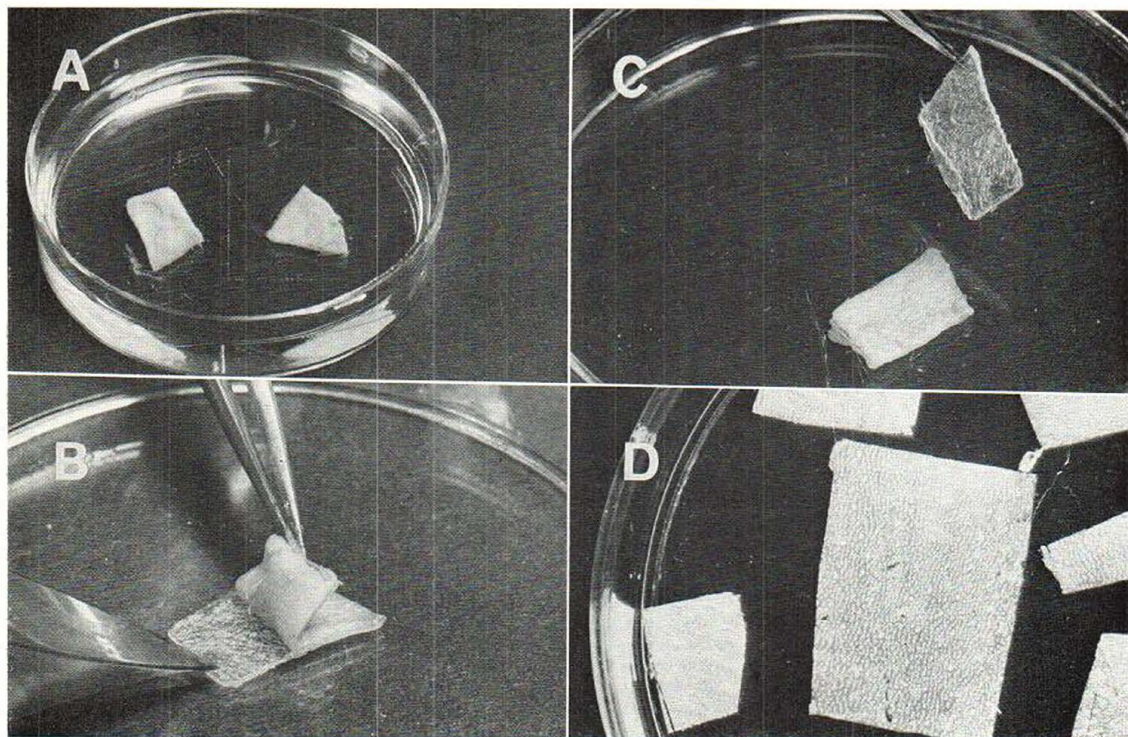


Fig. 1. Preparation of epidermal sheets from hairless mouse skin. (a) Incubation of whole biopsies mounted on coverslips with Permabond in separating medium (2% sod. bromide in

normal saline). (b) Separation of sheet from dermis. (c) Sheet "stabilized" due to impregnation with adhesive. (d) Sheets cut up into various sizes.

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