

Repeated samples of fat obtained with a biopsy needle

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Summary

Repeated samples of fat obtained with a biopsy needle have on analyses led to an understanding of the pharmacodynamics of the organochlorine compound dieldrin in man.

Introduction

The established and large-scale use of certain synthetic chemicals, especially pesticides, has led to their absorption and deposition in animals and man. The authors' interest lay in the pharmacodynamics of the synthetic organochlorine insecticide, dieldrin, which is primarily deposited and stored in the body lipid. Its study required repeated measurements of the deposition of this compound in the adipose tissue of volunteer subjects deliberately ingesting dieldrin, and in a random selection of the general population fortuitously exposed to dieldrin (and similar compounds) in an average normal diet. Open surgical biopsy of subcutaneous adipose tissue entails local scarring and discomfort, and so recourse was made to needle biopsy.

Method

The most satisfactory instrument was that described by Deingott & Kerpel (1967), but modifications were made to the original design

to allow the operator to know better the relative positions of the openings in the trocar and cannula, and to the cutting edge of the cannula to permit more efficient cutting of the fatty tissue. Also the cavity in the trocar was made slightly bigger by diminishing the thickness of the metal in its wall.

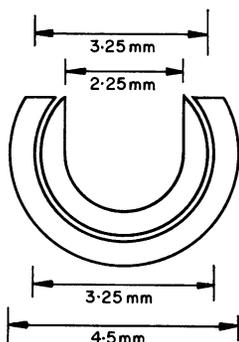


FIG. 1. Cross-section of needle at mid-point of fenestra.

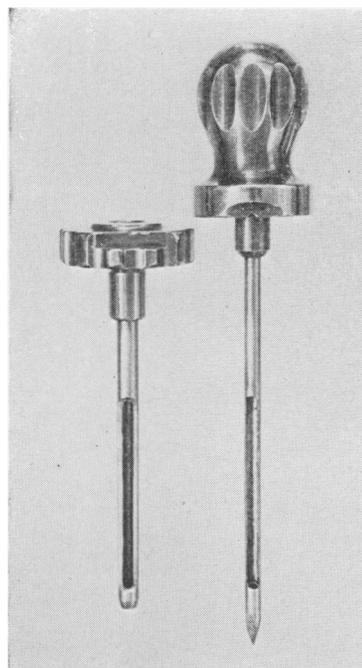


FIG. 2. Disassembled needle.

Results

With this instrument over fifty biopsies have been made under local anaesthesia of subcutaneous adipose tissue without complication other than occasional slight bruising and, in one case, a small haematoma. The fat was usually taken from the anterior abdominal wall just below the level of the umbilicus. In very thin subjects the

upper and outer third of the buttock was sometimes preferred.

The procedure can be carried out in the consulting room. An assistant is required to rotate the cannula sharply through a right angle whilst the operator steadies the trocar and applies negative pressure with a syringe.

The individual samples of adipose tissue obtained with the biopsy needle averaged 15.5 mg. This amount is adequate quantitatively and qual-

itatively for analyses of synthetic organochlorine pesticides in concentrations as low as 0.005 $\mu\text{g/g}$.

The designers' estimate of the value of this instrument is confirmed.

Reference

DEINGOTT, D. & KERPEL, S. (1967) New type of needle for obtaining large samples of human adipose tissue. *J. Lipid Res.* **8**, 85.