strates. The O-phosphate was readily deconjugated by all acid and alkaline phosphatases tested but no evidence was obtained for cleavage of the O-sulphate by limpet or rat liver microsomal or lysosomal sulphatases. The O-glucuronide was a good substrate for mammalian liver lysosomal glucuronidases. These results appear to eliminate the O-sulphate as a suitable drug for enzyme activation but substantiate the possible usefulness of the O-phosphate and O-glucuronide.

Friday 6 *April*

***IN VITRO* EFFECTS OF ICRF 159.** K. HELLMANN and R. C. HALLOWES. Departments of Cancer Chemotherapy and Pathology, Imperial Cancer Research Fund, London.

The effects of ICRF 159 were studied on transformed hamster cells in culture. 5 cm dishes were each plated with 10^4 cells and cultured at 37 °C for up to 72 hours in Eagle's medium containing a range of concentrations of ICRF 159. The cells were either harvested at the completion of the culture period or were transferred to drug-free medium.

Cell numbers increased to $2{\cdot}5 \times 10^4$ during the first 24 hours in various concentrations of ICRF 159 up to 20 μg/ml, but the rate of increase diminished with increasing drug concentrations during the next 48 hours. The rate of increase returned towards control values when cells were transferred to drug-free medium, provided the change occurred before 72 hours and only in drug concentrations of less than 10 μg/ml.

Specific morphological changes occurred in cells exposed to the drug which may enable the site of action of the drug to be determined.

EFFECTS OF THE ANTICOAGULANT, DEGRADED CARRAGEENAN, ON EXPERIMENTAL TUMOUR GROWTH. B. JOLLES, R. G. HARRISON and E. A. MOORE. Cancer and Radiobiology Research Laboratories, General Hospital, Northampton.

As the survival of an experimental tumour graft depends largely on the formation by the host of a new tumour stroma to replace that of the graft which is absorbed within 48–72 hours of implant, the study of substances with " anticoagulant " and fibrinolytic properties is of importance (O'Meara, *Irish J. med. Sci.*, 1958, 474; Jolles, *Lancet*, 1963, iii, 1234).

In previous work, the effects of interference with some fundamental events in connective tissue by heparin (Jolles and Greening, *Acta Un. int. Cancer.*, 1960, **16**, 682) and of laminarin, a mucopolysaccharide derived from the seaweed *Laminaria cloustoni* (Jolles, Remington and Andrews, *Br. J. Cancer*, 1963, **17**, 109) have been shown to reduce the rate of growth of Sarcoma S.180 in mice.

In the present series, in which the design of the experiments was along the same lines as those followed in the heparin and laminarin studies, a degraded Carrageenan derived from red seaweeds injected subcutaneously (0·05 ml in a 1·0, 1·5 or 2% concentration) 3 times weekly for 2 weeks, or twice weekly for 4 weeks at a site adjacent to the implanted tumour or intraperitoneally (0·1 ml/animal) reduces the rate of tumour growth.

PROLACTIN AND BREAST CANCER. P. G. SALUJA, J. M. HAMILTON and M. GRONOW. Department of Experimental Pathology and Cancer Research, University of Leeds.

Although prolactin is of supreme importance in the aetiology and genesis of rodent mammary tumours (Muhlbock and Boot, *Cancer Res.*, 1959, **19**, 402; Pearson *et al.*, *Trans. Ass. Am. Physns*, 1969, **82**, 225), it is not known whether it is implicated in mammary carcinogenesis in other species. In view of the many similarities that exist between human and canine breast cancer (Misdorp, 1964, Thesis, Utrecht; Schneider, *Cancer, N.Y.*, 1970, **26**, 419), an investigation was carried out of the prolactin concentration in the adenohypophysis of dogs afflicted with breast tumours.

Baseline values were established for normal dogs in which pituitary prolactin concentration was found to vary according to reproductive state (*e.g.* low in dioestrus, high in lactation). In bitches with mammary carcinoma, prolactin levels were significantly higher than in normal subjects of comparable endocrine state. This finding indicates that prolactin imbalance may be involved in canine mammary neoplasia.