

Original Article

THE BACTERIOLOGY OF CANCER

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In June 1920, at St. Michael's Hospital, Toronto, I exhibited a number of clinical cases of carcinoma which had been treated with injections of an antibacterial and antitoxic serum procured from the blood of horses inoculated with the toxins and pure attenuated cultures of a pleomorphic micro-organism which had been isolated from human cancerous growths and which I believed to be the immediate cause of cancer.

Since that date many papers by my associates 2, 3, 4, 5 (a), (b), (c), (d), 6 (a), (b), and myself 1 (a), (b), (c), have appeared, describing a method by which a morphologically similar micro-organism has been cultured from all types of malignant neoplasms and in a large percentage of cases from the blood of the hosts of these neoplasms.

The purpose of my present paper is to again put on record the various steps necessary for the isolation and culture of this malignant neoplastic micro-organism as well as to add some additional characteristics of its habits and reactions.

THE CULTURE MEDIUM

Of prime importance is the preparation of the culture medium. This will be described more minutely than heretofore, as it has been found that some who have attempted to repeat this work have failed because of neglect to carry out details of the instructions which may have been implied rather than definitely stated and emphasized.

A. PRELIMINARY PREPARATION OF THE MEDIUM

It is recommended that Pyrex glassware be used as it withstands sterilization by heat and pressure much better than

ordinary glass. It is also recommended to those repeating this work that new, chemically clean glassware and enamelware be used so as to expel any doubt about contaminations from former experiments as well as to eliminate unsatisfactory reactions in the medium. The equipment necessary for the proper preparation of the medium includes a number of four liter flasks, liter flasks and bottles, glass-ribbed funnels, test-tubes, enamel pail, clean gauze, Schleicher and Schüll filter paper (No. 588) or paper-pulp, a seed grinder and a standard apparatus for hydrogen ion determinations.

The ingredients of the medium which have been found to be most effectual for obtaining a luxuriant primary culture are several. Before enumerating these let me emphasize the fact that the manner of preparation, especially the use of unchlorinated tap or spring water with a low calcium content, the employment of the proper brand of peptone, the frequent regulation of the pH. during the course of mixing the constituents, and the final adjustment of the pH. is of the utmost importance.

The first ingredient of the medium is sunflower seed which has been finely ground in a seed grinder. Twenty-five grams of this is added to one liter of unchlorinated tap or spring water with a low calcium content.

The second ingredient is Iceland moss, obtained from Eimer and Amend, New York City. The proportion of this ingredient is twenty grams of Iceland moss to one liter of unchlorinated tap or spring water with a low calcium content.

The third ingredient is Irish moss, also secured from Eimer and Amend. The proportion of this ingredient consists of twenty grams of Irish moss to one liter of unchlorinated tap or spring water with a low calcium content.

Each ingredient is separately brought slowly to a boil and boiled slowly for one-half hour to one hour. They are then passed while warm through ten thicknesses of clean gauze or a clean towel free of alkalies. On account of the viscosity of the Irish moss solution it is necessary to frequently change the gauze or towel. The filtrate is immediately filtered while warm, through Schleicher and Schüll filter paper (No. 588) or through paper-pulp until clear. The filtering will take place more readily

