tions of these drugs in sputum. Here, we report such a method.

Mix equal weights of the mucous secretion and 200 g/L acetylcysteine solution (Mucomyst; Mead Johnson Pharmaceuticals, Evanville, IN 47721). Allow the mixture to stand at 37 °C for 30 to 60 min, swirling it periodically, until it becomes liquefied. Then handle the sample in the same manner as other biological fluids.

This procedure yields essentially the same results with our existing aminoglycoside solid-phase radioimmunoassay protocols (Clinical Assays, Cambridge, MA 02139) as do serum specimens.

The undiluted acetylcysteine, alone or in treated sputum, from control subject gives readings that are indistinguishable from those for the zero standard, and have no effect on the standard curves. When the liquefied sputa from patients were supplemented with known quantities of gentamicin or tobramycin and assayed, analytical recovery ranged from 97 to 108% for various concentrations up to 80 mg/L.

Reference

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Use of Tumor Markers as a Supplement to Cytology in Diagnosis of Malignant Effusions

To the Editor:

Accurate diagnosis of the benign or malignant nature of a serous effusion (pleural or peritoneal) is often difficult, and classic Papanicolaou cytodiagnosis has represented the most reliable method up to this time. We compared five of the best-known tumor markers with respect to their diagnostic values and that of cytology.

Guided by the relative interest in using these markers in the follow-up of cancer patients, we chose the widely known CEA (carcinoembryonic antigen) (1); \( \beta_2 \)-microglobulin, which is a good marker in lymphoproliferative disorders (2, 3); ferritin, an interesting marker whose value is still debated (4); and the two polyamines putrescine (PU) and spermidine (SPD), which are indicators of cell kinetics (5, 6).

Measurements methods were as follows:

- CEA: radioimmunoassay (RIA) with the commercial CEA kit from the French Atomic Energy Commission (Saclay, France)
- ferritin: RIA with the commercial kit from Clinical Assays, Division of Travenol Lab., Inc., Cambridge, MA 02139
- \( \beta_2 \)-microglobulin: RIA with the commercial “\( \beta_2 \)-Microtect” kit from Pharmacia, Uppsala, Sweden
- polyamines: automatic cation exchanger “Liquimat III” from Kontron, Velizy, France (7)

We studied 42 patients, who had 29 cancerous effusions (19 plural effusions and 20 ascites) and 13 benign effusions of serodermic origin. These last 13 cases were used to define a cutoff value for each marker.

The order of reliability of the various procedures for diagnosis of malignant effusions was as follows:

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Prostate-Specific Acid Phosphatase

To the Editor:

Based on the identification of specific antigens of human prostatic tissues (1, 2) and secretions (3-5), two principal approaches appear to have evolved in the current application of immunology to the study of prostatic cancer.

In the first, knowledge of the immunochemoicidentification of some prostate tissue-specific antigens, such as prostatic acid phosphatase (EC 3.1.3.2) (1, 2, 5), has been applied by, among others (6-8), Griffiths (9) to assess the potential usefulness of immunosassays of prostatic acid phosphatase over conventional biochemical and cytochemical methods, as a marker for early detection of prostatic cancer.

In the second, in vitro studies of host immunologic responsiveness to tumors have been applied toward the presumptive identification of tumor-specific and (or) tumor-associated antigens and tumor-associated immunity and their relevancy in prostatic cancer patients (10).
Both of these approaches have been the subject of recent reviews (11–13). However, use of acid phosphatase obtained from sources other than prostatic tissue, as in the report by Griffiths (9), would appear to be of concern in the light of earlier studies (1, 2). These studies utilize the sensitivity and specificity of antigen–antibody interaction and enzymic analysis to permit identification and immunochromatographic characterization of what was referred to as "prostatic tissue-specific acid phosphatase antigens" (1, 2). That is, the antisera used was shown—after rigorous quantitative absorption with normal human serum, kidney, spleen, prostatic fluid, and seminal plasma—to be capable of distinguishing between antibodies specific for acid phosphatase of prostatic tissue and acid phosphatase in prostatic fluid and seminal plasma.

Similarly, when antisera specifically absorbed with extracts of benign and malignant human prostatic tissues were compared with antisera to normal human prostate, it was demonstrated that pathological prostatic tissues were antigenically deficient in prostatic tissue-specific acid phosphatase antigens (2).

Thus the use of antisera to acid phosphatase of non-prostatic tissue origin—for example, in the study of Griffiths (9), wherein acid phosphatase from normal (1, 2) human seminal plasma was used as the basis for detecting acid phosphatase in the sera of prostatic cancer patients—is perhaps of questionable validity.

Furthermore, recent preliminary studies (14), directed toward elucidating the role of human prostatic acid phosphatase in tumor-associated immunity in prostatic cancer patients (13) have suggested that their leukocytes are not significantly sensitized to a homogeneous preparation of acid phosphatase (Calbiochem, San Diego, CA 92037; A grade, lot no. 902438, activity 100 kU/L at 37 °C), in contrast to their response to 3 mol/L KC1-(NH4)2SO4 extracts of malignant prostate containing acid phosphatase with an activity of 133 kU/L at 37 °C.

This is not intended to discourage investigation of the potential usefulness of assays for prostatic acid phosphatase. Rather, and somewhat in accord with Griffiths (9), results of recent studies, particularly those pointing to the presence of tumor-associated immunity and the presumptive identification of prostatic tumor-associated antigens (13) should serve as impetus to investigate other biological markers and factors involved in host response in prostatic cancer.

References

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To the Editor:

Ablin's timely Letter again raises the cogent point relating to differences in prostatic-specific acid phosphatase derived from sources within the prostate: seminal fluid, prostatic fluid, normal prostatic tissue, benign prostatic hyperplasia, and finally prostatic adenocarcinoma of the well-differentiated type.

His work over the past decade, cou-

plied with the more recent observations of Chu (1), make this point a matter of concern. The data of Chu, who used an antibody to acid phosphatase derived from prostatic adenocarcinoma and applied by a C.I.E.P., were remarkable in that no false positives were obtained in benign prostatic hyperplasia or in other non-prostatic malignancies.

Conversely, some opinions expressed verbally to me have suggested that the isoenzyme prepared from seminal fluid will not differ antigenically from the other sources mentioned.

In my recent paper (2), I merely reported an increase in enzyme activity of an acid phosphatase derived from seminal fluid in patients with prostatic disease. I make no claim that the enzyme was prostatic cancer specific. Evidence that it is, is simply not available for the serum of prostatic cancer patients.

I agree that we urgently need a trial with antibodies prepared from all the available prostatic sources, applied to both normal serum and serum with increased activity, to answer his pertinent question.

You free serum filtrates by centrifugation through supported dialysis tubing

Preparation of Protein-Free Serum

To the Editor:

We have devised an inexpensive technique for preparing protein-free filtrates by centrifugation through supported dialysis tubing. The method most commonly used for this involves Centrifil cones (Amicon, Lexington, MA 02173), which have a relative molecular-mass cutoff of either 25,000 or 50,000. Techniques involving a dialysis membrane have been described (1, 2), but no provision was made to support the membrane. In these procedures, small quantities of serum (about 2 mL) are used and 60 to 150 μL of ultrafiltrate is obtained. A method involving an ultrafilter and a syringe has also been reported (3).

Our device for collecting ultrafiltrates consists of a cellulose dialysis membrane with a dry flat width of 2.5 cm (cat. no. 8-667B; Fisher Scientific, Pittsburgh,