there appear in addition one or two sharper interferences corresponding to the strongest chitin lines.

After the subsequent acid treatment, all interferences become more intense and the diffuse rings are partly resolved into several sharper lines.

With cold 30 per cent hydrochloric acid the chitin could be extracted selectively; this treatment caused the chitin lines to disappear, but left the pattern of other lines unchanged. It does not effect any visible change in the electron micrograph.

There is little doubt that we have obtained the submicroscopic picture and the X-ray powder diagram of the insoluble yeast glucan mentioned earlier. Apparently, in the native membrane the substance is mainly amorphous, or possibly forms part of an amorphous complex of cell-wall constituents linked by easily hydrolysable bonds.

Details of our investigation will be published elsewhere[9].

The work has been supported by the Netherlands Organization for Pure Research (Z.W.O.).

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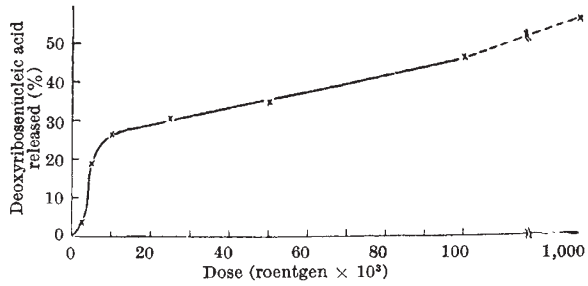
Effects of Ionizing Radiations upon Isolated Deoxyribosenucleoprotein Fibres

Changes in chemical and physical chemical characteristics of deoxyribosenucleoprotein and deoxyribosenucleic acid in solution following exposure to ionizing radiations have been described by several investigators[1–3]. Decreased viscosity and chemical decomposition have been reported.

Recently, we have carried out similar experiments using deoxyribosenucleoprotein in fibrous form and have found marked changes at relatively low radiation dosages.

Deoxyribosenucleoprotein was prepared from rabbit liver and calf thymus following the method of Petermann and Lamb[4]. Immediately prior to irradiation, the protein solution in 1 *M* sodium chloride was diluted with 6 volumes of distilled water at *p*H 6·8, producing the characteristic fibres; these, now suspended in 0·9 per cent sodium chloride solution, were subjected to ionizing radiation produced by a stream of electrons from an 800-kV. peak, resonance-transformer type cathode-ray machine. The control samples were prepared in identical fashion.

Following irradiation, the samples were centrifuged for 10 min. at 5,000 r.p.m. The clear supernatant fluid was assayed for nucleic acid by ultra-violet absorption at 2600 A. in a Beckman spectrophotometer, for deoxyribosenucleic acid by the Stumpf colorimetric test[5] and for protein by a quantitative biuret test[6].



Production of soluble deoxyribosenucleic acid by ionizing fibres of deoxyribosenucleic protein at *p*H 6·85

It was found that, following irradiation, variable amounts of nucleic acid had gone into solution (see graph). The biuret tests for proteins in the supernatants were negative.

No significant change in this effect was observed by varying the hydrogen ion concentration from *p*H 5 to *p*H 8. The addition of 0·005 *M* hydrogen peroxide to the deoxyribosenucleoprotein in *M* sodium chloride instead of the distilled water produced no change without irradiation; and subsequent exposure of this mixture to ionizing radiation was followed by changes identical with those without hydrogen peroxide.

In another experiment, deoxyribosenucleoprotein fibres were frozen at −20° C. during exposure. This procedure appeared to protect the fibres, since no deoxyribosenucleic acid was found in the supernatant fluid, indicating that the above-mentioned process takes place as the result of a chemical or 'indirect' reaction.

From these observations it appears that an important change occurs in the deoxyribosenucleoprotein fibres as a result of exposure to ionizing radiations. This decomposition may be related to the chromosome changes seen in cell nuclei following similar exposures.

Because of the radiomimetic action of the nitrogen mustards, we placed deoxyribosenucleoprotein fibres in varying concentrations (0·00064–0·0000064 *M*) of methyl *bis* (β-chloroethyl) amine hydrochloride, but found no evidence of decomposition even after allowing the fibres to remain in these solutions for 18 hr.

We are now carrying out experiments designed to study the effect of lowered oxygen tension, reducing agents and other chemical compounds upon the decomposition of the deoxyribosenucleoprotein fibres; we shall report detailed findings elsewhere.

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