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Purification of Adenosine Deaminase from Bovine Lung and Spleen

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Adenosine deaminase has been purified from a number of bovine tissues: intestinal mucosa (Brady & O'Connell, 1962), ox heart (Rockwell & Maguire, 1966), spleen (Pfrogner, 1967; O'Brien & Tully, 1968) and serum (Cory, Weinbraun & Suhadolnik, 1967). Although considerable similarities are apparent in some of their properties, the reported specific activities of these enzymes show wide variation from a value of 1 for the serum enzyme to 450 for the mucosal enzyme.

It was therefore decided to purify the enzyme from a number of tissues with a view to comparing their properties. In the present communication purifications from bovine lung and spleen have been made yielding preparations with specific activities of 400.

The deaminase from lung tissue was extracted from homogenized tissue with 0·02M-phosphate buffer, pH 7·0, followed by heating at 70° for 10min. and acidification to pH 4. The neutralized supernatant was fractionated with acetone. Adenosine deaminase was precipitated between 100–150% (v/v) acetone. The dissolved enzyme was chromatographed on DE-52 DEAE-cellulose (Whatman), pH 5·8, with a 2–33mM gradient of citrate buffer, and finally on Sephadex G-75 (superfine grade). The preparation had a specific activity of 420.

An improved method that introduced two non-consecutive ammonium sulphate fractionations in the purification of adenosine deaminase from spleen gave a preparation with a specific activity of 400.

We thank an Foras Taluntais (The Agricultural Institute) for a scholarship for M.N.

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The Relationship between Plasma and Tissue Vitamin E Concentrations in Man

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Vitamin E is widely distributed in human tissues (Pappenheimer & Victor, 1946). Deficiency of the vitamin in man is thought to occur at plasma concentrations less than 0·5mg./100ml. (Leonard, Losowsky & Pulvertaft, 1966). Tissue concentrations, although not necessarily reflected by plasma concentrations, are a better index in assessing deficiency. Apart from information obtained by prior loading with small doses of labelled or large doses of unlabelled vitamin E, little is known of the relationship between tissue and plasma vitamin E and the significance of the latter as a guide to tissue vitamin E depletion in man.

In the present study vitamin E concentrations were examined in tissues by using biopsy and post-mortem specimens and were compared with the concentrations found in the corresponding plasmas. Thirty specimens of rectus abdominis muscle were obtained at operation and 22 liver and 11 heart specimens were obtained *post mortem*. Tissue vitamin E was determined by the method of Bieri (1961) and plasma vitamin E by the method of Martinek (1964). A similar pattern of results was obtained for all tissues. There was an almost linear increase in the tissue concentration as the plasma concentration rose to 0·5mg./100ml., but the curve flattened off at higher plasma concentrations. Tissue concentrations in excess of 4μg./g. were always associated with plasma concentrations greater than 0·5mg./100ml. It is concluded that plasma vitamin E concentrations less than 0·5mg./100ml. reflect low vitamin E concentrations in the tissues studied.

This work was supported by a grant from Roche Products Ltd., Basle, Switzerland.

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