DEAE-cellulose and eluted with a gradient of pH and phosphate buffer the main laminarinase component was divided into three parts (A, B and C); the first (A) contained all the luteanase. The third peak (C) contained most of the laminarinase but did not lyse cell walls, either alone or in the presence of a purified luteanase. Fractions A and B both lysed cell walls and had little or no chitinase activity, which was found mainly in fraction C.

Fractions A, B and C are all endoglucanases, but, whereas fraction C produces mainly glucose, laminaribiose and laminaritriose from laminarin, fractions B and C do not seem to degrade this slightly branched polysaccharide (degree of polymerization about 25; Annan, Hirst & Manners, 1965) beyond the pentasaccharide stage.

It remains to be proved that the glucanase in fraction B is responsible for lysis of the cell walls, but evidently neither luteanase nor chitinase needs to be present. This fits the idea that the cell-wall β -(1 $\rightarrow$ 3)-glucan has practically no β -(1 $\rightarrow$ 6)-interchain linkages (Manners & Masson, 1969).

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Multiple Forms of Human Brain Monoamine Oxidase: Substrate Specificities

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Although pig brain monoamine oxidase (EC 1.4.3.4) is a single enzyme (Tipton & Spires, 1968), rat brain monoamine oxidase appears to exist in multiple forms (Johnson, 1968; Youdim, Collins & Sandler, 1969). Human brain mitochondrial monoamine oxidase has now been purified by the method described by Youdim *et al.* (1969); in all brain areas investigated (whole brain, cerebral cortex, cerebellum, basal ganglia, hypothalamus, pons and centrum ovale) multiple forms of the enzyme were detected. Four bands of activity separated by electrophoresis on 5% polyacrylamide gel (Youdim, Collins & Sandler, 1968); two bands migrated towards the anode (MAO₂ and MAO₃), one remained at the origin (MAO₁) and one migrated toward the cathode (MAO₄).

The specific activities (expressed as nmol of substrate deaminated/10 min per mg of protein) of the intact mitochondrial enzyme and of the bands of enzyme activity, both prepared from the various

brain areas, were measured with [¹⁴C]tryptamine, [¹⁴C]tyramine, [¹⁴C]dopamine (3,4-dihydroxy[¹⁴C]-phenethylamine) and [¹⁴C]benzylamine as substrates (Robinson, Lovenberg, Keiser & Sjoerdsma, 1968). The activities of the mitochondrial preparations for the four substrates were 0.73, 1.74, 2.36 and 5.61 respectively. Each band of activity also differed in its substrate specificities; for example, the activity of MAO₁ prepared from whole brain homogenates towards dopamine and tyramine was 2.09 and 1.66 respectively whereas that of MAO₄ was 58.54 and 0.45. In addition, comparison of the specific activities of the enzyme forms isolated from the various brain areas investigated showed marked differences. The activity towards dopamine of MAO₄ isolated from basal ganglia, a brain area rich in this amine (Bertler & Rosengren, 1959), was 338.03 whereas that of the same band found in the cerebellum was 4.46. The corresponding activities of MAO₁ were 1.45 and 1.33 respectively. However, not all the substrates showed such variation. The specific activity of MAO₄ towards tryptamine was 0.71 in the basal ganglia and 0.78 in the cerebellum. These variations in specific activity were not accompanied by differences in the corresponding Michaelis constants.

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Insoluble Pronase

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Insoluble pronase (B grade; Calbiochem Ltd., London W.1, U.K.) was prepared by the method successfully used for papain (Cebra, Givol, Silman & Katchalski, 1961) and other proteases.

A synthetic polypeptide of *p*-aminophenylalanine and leucine (25 mg) was diazotized and precipitated from solution at alkaline pH after partial self-coupling. The precipitate was washed with 50 mM-tris-HCl buffer, pH 8.0, containing CaCl₂ (25 mM), and a solution (1 ml) of pronase (8 mg) was added. The