cells harvested from cultures containing butan-1-ol and ethanol was examined by following the reduction of NAD^+ by the method of Vallee & Hoch (1955). The activity of the enzyme preparation was examined with respect to the following primary and secondary alcohols: ethanol, propan-1-ol, propan-2-ol, butan-1-ol, 2-methylpropan-1-ol, butan-2-ol, 2-methylbutan-1-ol and 3-methylbutan-1-ol. Results obtained indicate that the alcohol dehydrogenase of *C. acetobutylicum* is non-specific with regard to substrate. The synthesis of 2-methylpropan-1-ol, propan-1-ol and any of the above-mentioned alcohols is therefore possible on provision of a suitable precursor. Further studies on the properties of this enzyme preparation are in progress.

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The Alkylation of Yeast Hexokinase A

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Hexokinase A is one of the two isoenzymes isolated from baker's yeast by a method that avoids proteolysis (Lazarus, Ramel, Rustum & Barnard, 1966). Evidence suggests that 4 out of the 8 thiol groups/molecule of mol.wt. 100 000 are not essential for catalytic activity (Lazarus, Derechin & Barnard, 1968). However, inactivation of hexokinase A by iodoacetate at low ionic strength is accompanied by carboxymethylation of all 8 thiol groups (Lazarus *et al.* 1968).

Hexokinase A was treated with iodoacetate (10–700 mM) at pH 8.4 in tris-HCl buffer, *I* 0.1, when the enzyme is presumed to exist as a dimer of mol.wt. 50 000 (see Lazarus *et al.* 1968). At 25°C inactivation of the enzyme is first-order with respect to the concentration of each reactant with a rate constant of $0.9 \times 10^{-3} \text{ l} \cdot \text{mol}^{-1} \cdot \text{s}^{-1}$. At 30°C inactivation of hexokinase A is first-order with respect to the concentration of the enzyme, but the relationship between reaction rate and the concentration of iodoacetate is hyperbolic. The data are consistent with a reversible equilibrium between protein and inhibitor (K_i 0.03 M) before alkylation of the enzyme. At low concentrations of iodoacetate and at pH 8.4 the apparent second-order rate constant for inactivation at 30°C is $28 \times 10^{-3} \text{ l} \cdot \text{mol}^{-1} \cdot \text{s}^{-1}$ and it is very sensitive to changes in pH or temperature. These changes may reflect the conformational state of the protein (see also Jones, 1970).

Inactivation (86%) of hexokinase A at 30°C by 16 mM-iodo[^{14}C]acetate leads to the incorporation of 3.2 g-atoms of ^{14}C /mol of enzyme. Glucose (20 mM) prevents this inactivation but 0.8 g-atom of ^{14}C is still incorporated/mol of enzyme. When this latter experiment was repeated with 0.2 M-iodoacetate the enzyme still retained over 80% of its activity. After being desalted this preparation could be inactivated by fresh iodoacetate at 25°C, the kinetics of inactivation being identical with that described earlier for native hexokinase A. In one experiment the partially alkylated active enzyme described above was treated with iodo[^{14}C]acetate, when complete inactivation was accompanied by the incorporation of 1.9 g-atoms of ^{14}C /mol of enzyme.

The collective results confirm that hexokinase A possesses both essential and non-essential thiol groups. Hence glucose prevents inactivation but only decreases the degree of alkylation of enzyme by iodoacetate.

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The Hydrolysis of Glycine Oligopeptides by Guinea-Pig Intestinal Brush Borders

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Previous studies have shown that, whereas diglycine peptide hydrolase (EC 3.4.3.1) occurs predominantly in the cytosol from intestinal mucosa, significant amounts of triglycine peptide hydrolase (EC 3.4.1.3) are localized in the brush-border fraction (Peters, 1968). It was therefore decided to study the specificity of oligopeptide hydrolysis in further detail.

Brush borders were prepared from guinea-pig intestinal mucosa (Eichholz & Crane, 1965) and were demonstrated to be substantially free of other subcellular organelles. The brush borders were shown to hydrolyse glycine oligopeptides up to and including hexaglycine, but did not hydrolyse polyglycine (mol.wt. approx. 10 000). The oligopeptides studied were not hydrolysed by pepsin, trypsin, α -chymotrypsin, elastase, carboxypeptidase