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# IMMUNOLOGICAL PROPERTIES OF BACTERIAL PYRUVATE DEHYDROGENASE COMPLEXES AND CHARACTERISATION OF DELETION MUTANTS OF *ESCHERICHIA COLI*

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The pyruvate dehydrogenase complex of *Escherichia coli* produced two precipitin lines in double diffusion tests with antiserum raised against the homologous complex. These were identified as specific reactions involving pyruvate dehydrogenase ($E_1$) and lipoamide dehydrogenase ($E_3$) components. During the course of this work several mutants of *E. coli* with deletions in the *nadC–aroP–aceF–lpd* region were investigated and their immunological properties were found consistent with the earlier results of enzymic and genetic characterization. A few deletion strains possessing low pyruvate dehydrogenase ($E_1$) activities showed no precipitin lines corresponding to the $E_1$ component. The low $E_1$ activities could be attributed to the presence of pyruvate oxidase in these strains.

Evidence for immunological cross reactivity between the pyruvate dehydrogenase complexes of *Pseudomonas aeruginosa* and *E. coli* was observed despite the negative precipitin reaction in double diffusion tests.

Crossed immuno electrophoresis (CIE) showed no immunological cross reactivity between the pyruvate dehydrogenase complex of *Bacillus stearothermophilus* and antiserum raised against the *E. coli* pyruvate dehydrogenase complex. The CIE precipitin pattern produced by the *E. coli* pyruvate dehydrogenase complex against the homologous antiserum was characteristically different from the CIE pattern of *B. stearothermophilus* complex to its antibodies. The *E. coli* enzyme complex readily dissociated and the final precipitin pattern was a result of a complex between the dissociated particles (subcomplexes and components) and component antibodies. Partial dissociation of *B. stearothermophilus* complex occurred only after modification of the protein with citraconic anhydride.