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Effects of Cabbage Phospholipase D on the Lipids and Enzyme Activities of Rat Liver Microsomal Fraction

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Phospholipase A cleaves fatty acid chains and phospholipase C removes polar groups (phosphorylcholine, phosphorylethanolamine and phosphorylserine) from membrane phospholipids. The activities of certain membrane-bound enzymes of isolated mitochondrial and microsomal membranes are profoundly affected under the action of these phospholipases *in vitro* (Awasthi *et al.*, 1969; Poulter *et al.*, 1971). The specificity of the action of phospholipase is now beginning to prove useful in obtaining and understanding the role of polar and non-polar regions of phospholipid molecules in the maintenance of structure and function in biological membranes.

Phospholipase D specifically removes only bases from isolated phospholipids (Kates, 1965; Davidson & Long, 1958; Talwalkar *et al.*, 1969) and also mediates transphosphatidylolation in the presence of choline, ethanolamine, serine, glycerol etc. (Yang *et al.*, 1966). Its action on biological membranes does not seem to have been adequately studied.

The action of partially purified phospholipase D of savoy cabbage on rat liver microsomal fraction has been studied. Evidence is presented for the degradation of membrane phospholipids with concomitant loss of glucose 6-phosphatase and adenosine triphosphatase activities in phospholipase D-treated microsomal fraction and release of phospholipid bases, cholesterol, uncharacterized lipid and protein (including glucose 6-phosphatase and adenosine triphosphatase) into the medium. The results obtained indicate a role for phospholipid bases in the binding of membrane cholesterol and protein.

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