

ABSTRACT

This thesis is mainly devoted to describing the theory and practice of gas liquid chromatography and its application to biochemical studies.

Ion - exchange chromatography was employed in the isolation of hypoglycin from the seeds of the ackee plant (Blighia sapida). The toxin (hypoglycin) was subsequently administered to rats that were starved over a 24 h period. Blood glucose levels were determined and hypoglycaemia was evident. Urine analysis by gas chromatographic methods revealed organic aciduria, with the excretion of dicarboxylic acids.

Human cases of hypoglycin poisoning were examined. Organic aciduria was detected. Serum analysis was also undertaken, the results of which showed increased levels of volatile short-chain fatty acids and long-chain free fatty acids in the serum.

The origin of these dicarboxylic acids was investigated using radioactively labelled palmitic acid. These acids were isolated using preparative gas liquid chromatography. It was ascertained that long-chain monocarboxylic acids are precursors of these dicarboxylic acids. Evidence from the radioactive experiment suggests that the dicarboxylic acids are formed via 3-5 successive cycles of β -oxidation followed by α -oxidation.