

ARTERIAL KETONE BODY RATIO IN VARIOUS HEPATIC PATHOLOGIC CONDITIONS AND MULTIPLE ORGAN FAILURE

Essay

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LIST OF ABBREVIATIONS

AKBR Arterial ketone body ratio

ALT Alanine transaminase
AST Aspartate transaminase
ATP Adenosine triphosphate
CSF Cerebrospinal fluid

EGP Endogenous glucose production

F.H.F. Fulminant hepatic failure

FDP Fibrinogen degradation products

FFA Free fatty acid

G3P Glycerol 3-phosphate

GABA Gamma amino butyric acid

HBV Hepatitis B- virus

HMG-COA B-hydroxy B-methyl glutaryl COA

HSS Hepatic stress score.

NAD+ Oxidized nicotinamide adenine dinucleotide NADH Reduced nicotinamide adenine dinucleotide

OLTX Orthotopic liver transplantation. PSE Portal systemic encephalopathy

RTI Redox tolerance index TCA Tricarboxylic acid cycle

TKB Total ketone body

VLDL Very low density lipoprotien



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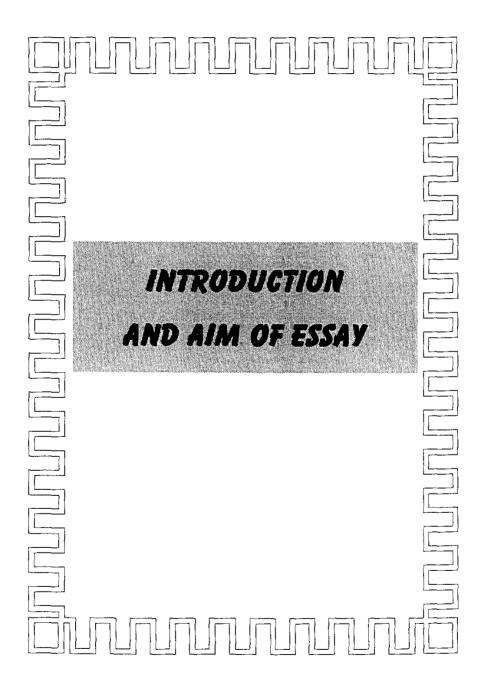
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INTRODUCTION

The liver plays a central role in different biological functions and is being increasingly recognised as a critical organ in the pathogenesis of multiple organ failure (Ozawa et al., 1983).

Previous studies have suggested that the most basic metabolic feature leading to hepatic failure is the failure of the mitochondrial energy production to a point where hepatic energy needs are not satisfactory (Tanaka et al., 1987).

Thus, the assessement of hepatic functional reserve could be based on the simple assumption that normal hepatic mitochondrial metabolism is necessary to preserve normal function and prevent cellular damage. Measurement of Arterial ketone body ratio (AKBR) [Acetoacetate / B-hydroxybutyrate], appears to offer this potential by reflecting the liver metabolic status. Moreover, AKBR is closely correlated with the energy charge level of the liver in Jaundice, massive heamorrhage, liver transplantation and after hepatic resection as a predictor of the prognosis (Asonumået al., 1991; and Dalton, 1994).

The most applied laboratory method for measurement of AKBR (Concentration of acetoacetate and B-hydroxybutyrate) is an enzymatic method depending on spectrophotometric measurement of the reduction of diphosphopyridine nucleotide by B-hydoxybutyrate in the presence of B-hydroxybutyrate dehydrogenase (Williamson and Mellanby, 1974).

AIM OF ESSAY

The aim of this essay is to review the role of Arterial ketone Body ratio and its clinical significance in various pathologic conditions leading to multiple organ failure and the laboratory methods used for its measuremnt.