TOTAL HOMOCYSTEINE NEW TRENDS IN METHODS AND CLINICAL APPLICATIONS

ESSAY
Submitted in Partial Fulfillment of
Master Degree
in
Clinical and Chemical Pathology

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FACULTY OF MEDICINE
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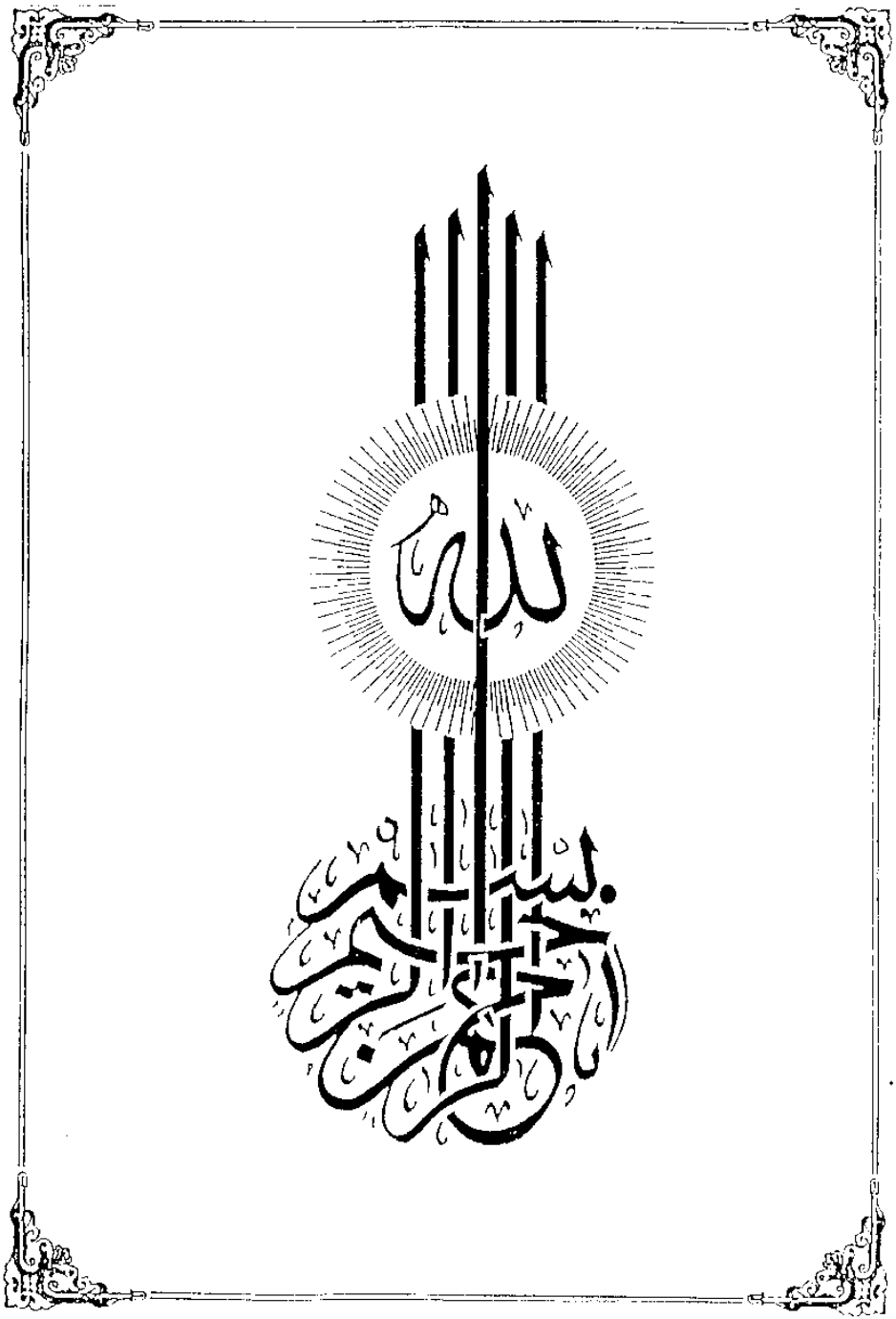
1995



Acknowledgment

First and foremost, thanks are due to ALLAH

I would like to express my deep appreciation and gratitude to Prof. Dr. Nadia Abdel-Sattar, Assistant Professor of Clinical Pathology, Faculty of Medicine, Ain Shams University, for her scientific guidance, and continuous assistance during this work.

I shall always remain greatly indebted and much obliged to Dr. Ola Demerdash, Assistant Professor of Clinical Pathology, Faculty of Medicine, Ain Shams University for her kindness, giving much of her valuable time, her encouragement gave me a push to this work.

I would also like to express my deep appreciation to Dr. Nashwa El-Badawi, Assistant Professor of Clinical Pathology, Faculty of Medicine, Ain Shams University, for her valuable advice and help.

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LIST OF ABBREVIATIONS

ABD-F	4 aminosulfonyl-7-fluoro-2,1,3-benzoxadiazole-4-sulfonate.
$AgNO_3$	silver nitrate
B_6	pyridoxine
B_{12}	cobalamin
EDTA	ethylenediaminetetra-acetate
GC	gas chromatography
Hcy	homocysteine
HPLC	high performance liquid chromatogrphy
LDL	low density lipoprotein
mBrB	monobromobimane
MS	mass spectrometry
$NaBH_4$	sodium borohydride.
NaCN	sodium cyanide.
NaOH	sodium hydroxide.
NH_4OH	ammonium hydroxide.
SBD-F	ammonium-7-fluoro-2,1,3-benzoxadiazole-4-sulfonate.
SD	standard deviation.
TM	thrombomodulin.
V	labile factor.
Va	activated labile factor.
X	Staurt-Prower factor.
Xa	activated Staurt-Prower factor.

ABSTRACT

Omaima Mohamed Taha, Total homocysteine: new trends in methods and clinical applications.

Clinical and Chemical Pathology Department Faculty of Medicine, Ain Shams University, 1995.

This review of literature aims to point out total homocysteine as regards its chemistry, metabolism, methods of assay, and clinical evaluation of total homocysteine as a marker of various disease states with emphasis on folate and cobalamin deficiencies, premature vascular diseases, and homocystinuria.

Homocysteine, a sulfhydryl amino acid, is the demethylated derivative of methionine. Hcy is a branch-point metabolite, the biologic fate of which is linked to vitamin B_{12}, reduced folates, and vitamin B_6.

Hcy in plasma forms mixed disulfides with other sulfur compounds and albumin. Total plasma Hcy includes all these forms. Plasma Hcy should be determined as such to avoid errors related to redistribution between different forms. Plasma Hcy shows a transient increase after methionine intake, and the postloading Hcy seems to be a measure of the efficiency of Hcy metabolism.

Several new Hcy methods have been developed and old techniques have been refined. The practical aspects of the techniques are quite different. Choice of a method depends on the personnel and instrumental resources available, the training of the technical staff, the anticipated number of samples to be analyzed, and special interests concerning the codetermination of other metabolites.