Physiology of the Liver

Alvin Tan Siaw Boon

INTRODUCTION
The liver is the largest gland in the body. It plays a vital role in the synthesis, storage and metabolism of substances to allow the maintenance of homeostasis in the body.

FUNCTIONAL ANATOMY
The liver is approximately 2% of the body weight and receives 25–30% of the total cardiac output. It has a dual blood supply, of which 25% is from the hepatic artery, which provides 50–55% of the oxygen the liver requires, and 75% from the portal vein, which provides the remaining oxygen supply and all other substances absorbed from the portal systems. The hepatic arterial supply is important to maintain nutrition to connective tissues and walls of bile ducts.

FUNCTIONS OF THE LIVER
The liver (Figure 10.1, overleaf) functions like a filter and factory between the gastrointestinal tract and the rest of the body. Digested food and nutrients are absorbed into the liver through the portal system. In the liver, these nutrients are processed, stored and synthesized into substances that can be used by the rest of the body. This includes glucose, fatty acids, phospholipids, cholesterol, amino acids, albumin, coagulation factors and plasma proteins. Apart from the metabolism of nutrients, the liver synthesizes substances that facilitate the absorption of food from the digestive tract. Bile salts are important to emulsify lipids and convert them into water-soluble micelles that enable fatty acids to be absorbed (Table 10.1, p. 77).

It also plays an important role in metabolizing harmful endogenous and exogenous compounds such as drugs, hormones, toxins, bilirubin and metabolites, and converts them into inert compounds that can be excreted either
Physiological Basis of Acute Care is a short, easy-to-read-book that features:

* Chapters that link the management of life such as Basis of Life and Physiology of Death for frontline providers.
* Chapters covering important organ systems from airway to kidney, including energy, heat and acid-base balance.
* Special chapters on maternal-foetal, paediatrics, elderly and obesity.
* Clinical implication and application sections within each chapter for students to relate to clinical practice.
* Medical illustrations by Frank Netter, the foremost master of medical illustration.
* 58 fully coloured illustrations, diagrams and charts to enhance learning and understanding.

Also features:

* Content reviewed by international and Malaysian academicians.
* Foreword by Dr Angela Enright, President, World Federation of Societies of Anaesthesiologists (WFSA), United Kingdom.

“
This book achieves its objectives of presenting simple, basic physiology in an uncomplicated manner.”

— Michael FM James, Professor and Head, Department of Anaesthesia, University of Cape Town, South Africa

“This book is simple and enjoyable to read, and presents the subject in a systematic fashion.”

— Thiam Aun Lim, Professor, Anaesthesiology Unit, Universiti Putra Malaysia, Malaysia

SAUNDERS
ELSEVIER

www.asia.elsevierhealth.com