

<<医学生理学>>

图书基本信息

书名：<<医学生理学>>

13位ISBN编号：9787565902703

10位ISBN编号：7565902705

出版时间：2012-1

出版单位：北京大学医学出版社有限公司

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页数：1091

字数：2825000

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内容概要

自1956年第1版出版以来,《医学生理学》每5年修订1次,历经五十余年。现已成为世界范围内的权威生理学教科书。

最新的第12版依然延续了“用最简明的语言讲述生理学核心知识”的编写传统,并特别加入了近年来重要的最新进展,涉及心血管、神经、消化系统的生理学及分子生物学内容。第12版的另一特色是将学生“必须要掌握”和“最好能掌握”的知识进行区分,“最好能掌握”的内容以灰色阴影进行标示,以适应不同学生的需要,进一步提升了本书的易用性。

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作者简介

作者：（美国）霍尔（John E.Hall）

书籍目录

Introduction to Physiology: The Cell and General
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章节摘录

版权页：插图： Treatment of Decompensation. The decompensation process can often be stopped by (1) strengthening the heart in any one of several ways, especially by administration of a cardiotonic drug, such as digitalis, so that the heart becomes strong enough to pump adequate quantities of blood required to make the kidney function normally again, or (2) administering diuretic drugs to increase kidney excretion while at the same time reducing water and salt intake, which brings about a balance between fluid intake and output despite low cardiac output. Both methods stop the decompensation process by re-establishing normal fluid balance so that at least as much fluid leaves the body as enters it. Mechanism of Action of the Cardiotonic Drugs Such as Digitalis. Cardiotonic drugs, such as digitalis, when administered to a person with a healthy heart, have little effect on increasing the contractile strength of the cardiac muscle. However, when administered to a person with a chronically failing heart, the same drugs can sometimes increase the strength of the failing myocardium as much as 50 to 100 percent. Therefore, they are one of the mainstays of therapy in chronic heart failure. Digitalis and other cardiotonic glycosides are believed to strengthen heart contractions by increasing the quantity of calcium ions in muscle fibers. This effect is likely due to inhibition of sodium-potassium ATPase in cardiac cell membranes. Inhibition of the sodium-potassium pump increases intracellular sodium concentration and slows the sodium-calcium exchange pump, which extrudes calcium from the cell in exchange for sodium. Because the sodium-calcium exchange pump relies on a high sodium gradient across the cell membrane, accumulation of sodium inside the cell reduces its activity. In the failing heart muscle, the sarcoplasmic reticulum fails to accumulate normal quantities of calcium and, therefore, cannot release enough calcium ions into the free-fluid compartment of the muscle fibers to cause full contraction of the muscle. The effect of digitalis to depress the sodium-calcium exchange pump and raise calcium ion concentration in cardiac muscle provides the extra calcium needed to increase the muscle contractile force. Therefore, it is usually beneficial to depress the calcium pumping mechanism a moderate amount using digitalis, allowing the muscle fiber intracellular calcium level to rise slightly.

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