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Manuscript NO: 58092

Manuscript Type: REVIEW

Overview of bile acid signaling in the cardiovascular system

Rou Zhang, Wen-Qi Ma, Meng-Jun Fu, Juan Li, Chun-Hua Hu, Yi Chen, Mi-Mi Zhou, Zhi-Jie Gao, Ying-Li He

Abstract

Bile acids (BAs) are classically known to play a vital role in the metabolism of lipids and in absorption. It is now well established that BAs act as signaling molecules, activating different receptors such as farnesoid X receptor, vitamin D receptor, Takeda G-protein-coupled receptor 5, Sphingosine-1-phosphate, Muscarinic, channel-mediated (BK channel) and participating in the regulation of energy homeostasis, lipid and glucose

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Increased serum bile acid level and cardiovascular function.



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Bile Acids Regulate Cardiovascular Function

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3705909>

Human diseases associated with **elevated serum BAs** (>200–400 μM) and **altered cardiac function** include ICP, obstructive jaundice, chronic viral hepatitis and **cirrhosis** 4, 40. ICP is complicated by fetal distress, pre-term labor and intrauterine death.

Cited by: 115

Author: Sandeep Khurana, Jean Pierre Raufman...

Publish Year: 2011

Increased serum bile acid level is associated with high ...

jtd.amegroups.com/article/view/34256/html ▾

Increased serum bile acid level is associated with **high-risk** coronary artery plaques in an asymptomatic population detected by coronary computed tomography angiography Background: There are limited data on the association between **serum total bile acid level** ...

Author: Bu-Chun Zhang, Jun-Hong Chen, C...

Publish Year: 2019

Heart and bile acids – Clinical consequences of altered ...

<https://www.sciencedirect.com/science/article/pii/S0925443917304969>

Apr 01, 2018 · **Total serum bile acid** (TSBA) concentrations are known to **increase** in patients with liver dysfunction . In general, it has been observed that patients with **liver disorders** have **cardiac** and haemodynamic changes with **increased cardiac output** and **decreased vascular resistance** [

...

Cited by: 10

Author: Tharni Vasavan, Elisa Ferraro, Effendi Ib...

Publish Year: 2018

Bile acids and cardiovascular function in cirrhosis ...

<https://onlinelibrary.wiley.com/doi/full/10.1111/liv.13394>

The **effects of bile acids** on the main **cellular** pathways involved in **cardiovascular homeostasis**. **Elevated bile acid (BA) levels** affect the **function** and metabolism of cardiomyocytes (CM), vascular endothelial cells. VSMC (vascular smooth muscle cells) and circulating macrophages.



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Bile acid metabolism and signaling - PubMed

<https://pubmed.ncbi.nlm.nih.gov/23897684>

Abstract. Bile acids are important physiological agents for intestinal nutrient absorption and biliary secretion of lipids, **toxic metabolites**, and xenobiotics. Bile acids also are signaling molecules and metabolic regulators that activate nuclear receptors and **G protein-coupled receptor** (GPCR) signaling to regulate **hepatic lipid**, **glucose**, and **energy homeostasis** and maintain metabolic homeostasis.

Cited by: 476 Author: John Y. L. [Chiang](#)

Publish Year: 2013

Overview of Bile Acids Signaling and Perspective on the ...

<https://www.mdpi.com/2218-273X/8/4/159>

Bile acids (BA) are classically known as an important agent in **lipid absorption** and **cholesterol metabolism**. Nowadays, their role in **glucose regulation** and **energy homeostasis** are widely reported. BAs are involved in various cellular signaling pathways, such as **protein kinase cascades**, **cyclic AMP (cAMP) synthesis**, and **calcium mobilization**.

Cited by: 14 Author: Noorul Izzati Hanafi, Anis Syamimi Moham...

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Bile acid receptors link nutrient sensing to metabolic ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5662125>

2. A brief introduction on **bile acid** metabolism. Cholesterol conversion into **bile acids** involves several enzymatic and non-enzymatic reactions (Fig. 1A). Hepatocytes are the only cell type that expresses all the required **bile acid** synthetic enzymes, which are located in different intracellular compartments, including the endothelium reticulum (ER), cytosol, mitochondria and peroxisomes.

Cited by: 3 Author: Jibiao Li, Tiangang Li

Publish Year: 2017

Bile acid

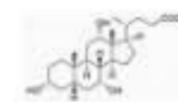
Steroid Acid

Bile acids are steroid acids found predominantly in the bile of mammals and other vertebrates. Diverse bile acids are synthesized in the liver. Bile acids are conjugated with taurine or glycine residues to give anions called bile salts.

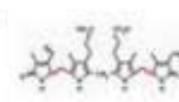


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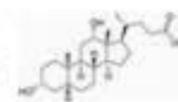
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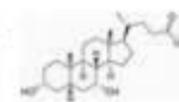
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Bilirubin



Deoxycholic acid



Chenodeoxycholic acid



Steroid

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<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6316857>

Nov 27, 2018 · Bile acids (BA) are classically known as an important agent in **lipid absorption** and **cholesterol metabolism**. Nowadays, their role in **glucose regulation** and **energy homeostasis** are widely reported. BAs are involved in various cellular signaling pathways, such as **protein kinase cascades**, **cyclic AMP (cAMP) synthesis**, and **calcium mobilization**.

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Publish Year: 2018

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Bile acid

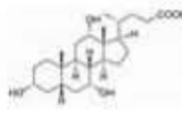
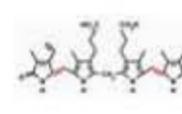
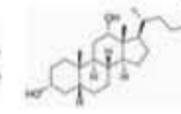
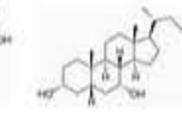
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