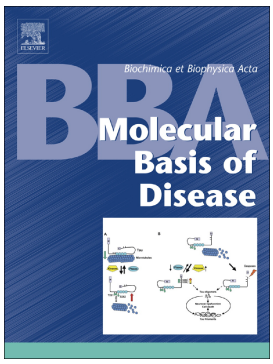

Farnesoid X receptor: A "homeostat" for hepatic nutrient metabolism

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Abstract

The Farnesoid X receptor (FXR) is a nuclear receptor activated by bile acids (BAs). BAs are amphipathic molecules that serve as fat solubilizers in the intestine under postprandial conditions. In the post-absorptive state, BAs bind FXR in the hepatocytes, which in turn provides feedback signals on BA synthesis and transport and regulates lipid, glucose and amino acid metabolism. Therefore, FXR acts as a homeostat of all three classes of nutrients, fats, sugars and proteins. Here we re-analyze the function of FXR in the perspective of nutritional metabolism, and discuss the role of FXR in liver energy homeostasis in postprandial, post-absorptive and fasting/starvation states.

FXR, by regulating nutritional metabolism, represses autophagy in conditions of nutrient abundance, and controls the metabolic needs of proliferative cells. In addition, FXR regulates inflammation via direct effects and via its impact on nutrient metabolism. These functions indicate that FXR is an attractive therapeutic target for liver diseases.

Key words: bile acids; FXR; nutrient metabolism; autophagy; proliferation; inflammation