Sinusoidal events during fibrosing liver injury
Published in Expert Reviews in Molecular Medicine by Cambridge University Press 2003

Figure 1. Sinusoidal events during fibrosing liver injury. (a) Normal liver. The cellular elements of liver are organised within the units of sinusoids, with the subendothelial space of Disse separating the epithelial component (hepatocytes) from the sinusoidal endothelium. The tissue macrophages – Kupffer cells – are found in the sinusoids, whereas the hepatic stellate cells (HSCs) are perisinusoidal in location. The hepatocyte microvilli are important for the normal physiological function of the cells. The characteristic fenestrae of the sinusoidal endothelial cells permit the passage of large macromolecules including lipoproteins. (b) Injured liver. As fibrosis develops in response to liver injury, changes occur within the subendothelial space and within the hepatic sinusoid. These changes include alterations in both cellular responses and extracellular matrix (ECM) composition. Activation of HSCs, which are the primary source of ECM, leads to the accumulation of scar (fibril-forming) matrix. This results in widening of the space of Disse and loss of endothelial fenestrae. Transport across the sinusoidal wall is hence reduced, leading to deterioration of hepatic function. Activation of Kupffer cells accompanies liver injury and contributes to paracrine activation of HSCs. For a diagram relating this microanatomy to the liver as a whole, see fig001dab in Ref. 8. Figure based on illustration in Ref. 25, with permission (Copyright © 2000 by The American Society for Biochemistry and Molecular Biology, Inc.) (fig001sfn).