

Difference Between Sinusoids and Capillaries

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Key Difference - Sinusoids vs Capillaries

Blood circulation plays an important role in the survival of living organisms. It consists of different components such as a heart as the pumping device, blood as the circulatory medium with veins, arteries, capillaries etc. The circulatory system functions in the transportation of different components which are essential for our survival. It mainly transports oxygen and nutrients so that the cells could absorb and transport metabolic waste from the cells to the excretory organs. Capillaries are small blood vessels which involve in the exchange of different materials. Sinusoids have a similar function to that of capillaries. They only differ in structure. **Capillaries possess a continuous and complete basal membrane whilst the sinusoids possess only discontinuous incomplete basal membrane.** This is the **key difference** between capillaries and sinusoids.

What are Sinusoids?

A sinusoid is a type of blood vessel which is similar to fenestrated endothelium. The basal membrane is discontinuous, unlike the capillaries. Sinusoids are also known as open pore capillaries. The permeability increases with the presence of open pores. Also, the number of tight junctions and inter-cellular clefts increase the permeability. This permeability allows small proteins to enter and exit from the bloodstream. The sinusoid has a lumen which is about 30 microns and has thin walls. The lining of sinusoids contains endothelial cells with phagocytic cells.

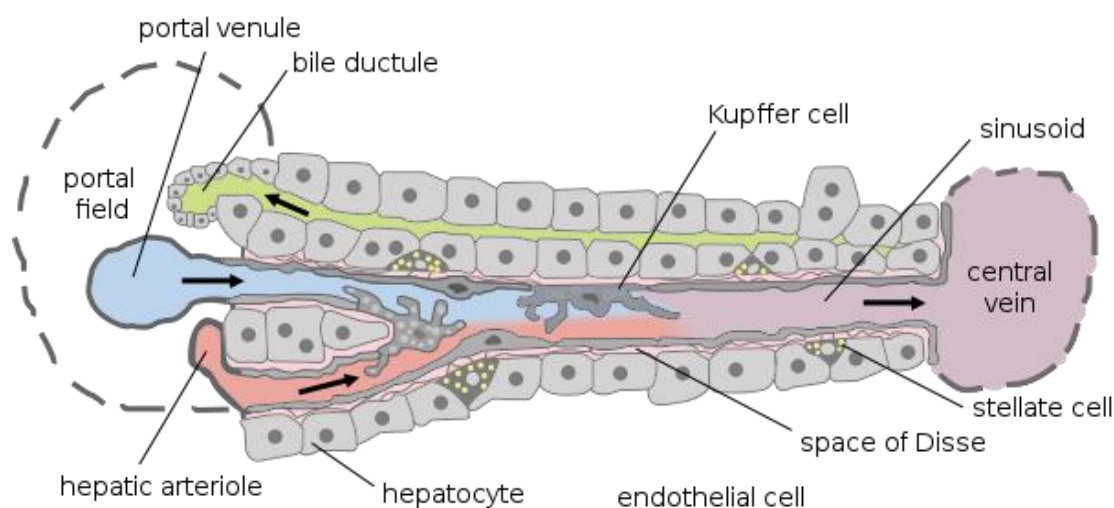


Figure 01: Sinusoids

Sinusoids are mostly present in the liver, spleen and bone marrow. The liver sinusoid is another type of sinusoidal blood vessel which resembles a common sinusoid. It also possesses a discontinued epithelium or basal membrane. The liver sinusoids provide a special function to the living system. It acts as a site for the mixing of blood which is oxygen-rich that is derived from the hepatic artery and blood which is nutrient rich from the portal vein. This provides the chance for the nutrients that are taken from the small intestine to the liver to be absorbed again by the body cells.

What are Capillaries?

A blood capillary is a hollowed out tube-like structure with one thick cell wall (endothelial). It is about 5 to 10 micrometers in diameter. Capillaries can be defined as the smallest type of blood vessels which transport blood through arterials and venules. Many substances are exchanged with the interstitial fluid which surrounds these capillary vessels. Water in the proximal part, oxygen, and glucose are the substances which exit the capillaries while water in the distal part, carbon dioxide, uric acid, lactic acid, urea, and creatinine enter the capillaries.

The blood which is flown from the heart through the arteries is flown through arterioles which are the narrow branches of arteries. These arterioles are further branched into capillaries. The wastes and the nutrients are exchanged here. The venules are formed when the capillaries are widened and joined together. When the tissue is metabolically active, more capillaries are needed to provide nutrients and carry away wastes. There are three types of capillaries namely, continuous, fenestrated and discontinuous (sinusoidal).

Capillaries

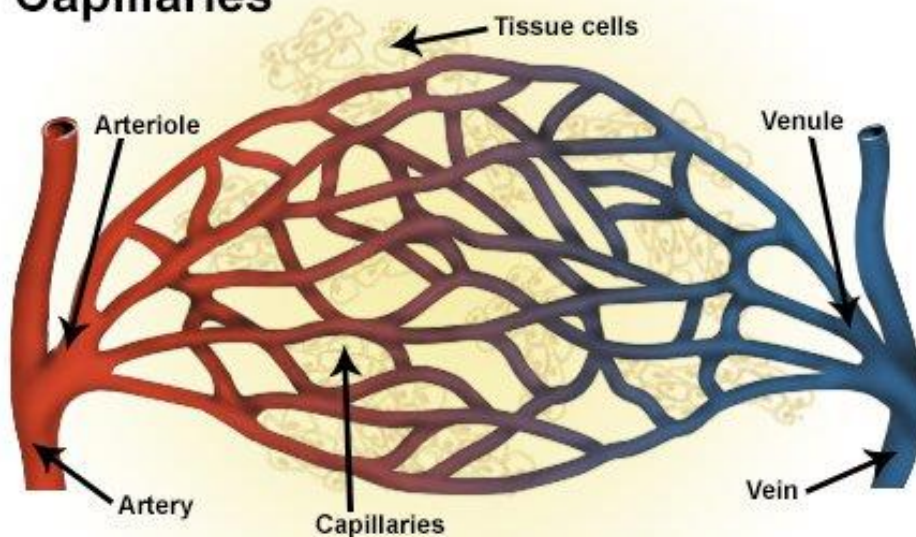


Figure 02: Capillaries

When the capillaries are continuous where an endothelial cells form a lining which is not interrupted, it is known as continuous capillaries. These allow small particles such as certain ions and water to move through intercellular clefts. But, lipid particles which are soluble, diffuse through endothelial cells. Fenestrated capillaries consist of small pores on endothelial cells which allow some proteins and small molecules to diffuse through. Mostly these type of blood capillaries is found in renal glomerulus. Discontinuous capillaries are located on the endothelium and have large open pores. These allow red and white cells and serum proteins to move through. Discontinuous capillaries are commonly found in bone marrow and lymph nodes.

What is the Similarity Between Sinusoids and Capillaries?

- Both are involved in blood circulation (exchange of materials) in the circulatory system.

What is the Difference Between Sinusoids and Capillaries?

Sinusoids vs Capillaries	
Sinusoid is a type of blood vessel which is similar to fenestrated endothelium with the discontinuous basal membrane.	Capillary is the smallest type of blood vessel which transports blood through arterials and venules.
Basal Membrane	
Sinusoid has an incomplete basal membrane.	Capillary has a complete continuous basal membrane.
Lumen	
Larger and wider lumen is present in sinusoid.	Comparatively a smaller lumen is present in the capillary.
Representative Tissue	
Sinusoids are found in liver, bone marrow, and spleen.	Capillaries are found in muscle, skin, lung, central nervous system, heart, lymph nodes.

Summary - Sinusoids vs Capillaries

Sinusoids and capillaries are structures in which exchange of different materials take place. This includes the exchange of oxygen and nutrients from the blood to the cells and waste materials from the cells to blood. Sinusoids possess incomplete basal membrane which appears as discontinuous. Capillaries possess complete and continuous basal membrane. Sinusoids are typically present in liver and spleen and also in the bone marrow. Capillaries are present in most of the important tissues of the body which includes, heart, muscles, lung and central nervous system. This is the difference between sinusoids and capillaries.

Reference:

- 1.Study.com, Study.com. [Available here](#)
- 2.The Editors of Encyclopædia Britannica. "Sinusoid." Encyclopædia Britannica, Encyclopædia Britannica, inc., 22 Jan. 2015. [Available here](#)

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