

Example of essay on lymphatic system

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Lymphatic System

The lymphatic system is an extensive one way drainage system, which is made up of lymphatic vessels, lymph nodes, the spleen and the thymus. It is part of the circulatory system. The lymphatic vessels have three main functions. Lymphatic vessels drain water and plasma protein that leaks from the capillaries and return them to the circulatory system, they carry fats absorbed in the small intestines to the blood, and transport cellular remains, pathogens, and foreign cells to the lymphoid tissues where white blood cells annihilate them (Starr. C, Targgat, Vers & Starr. L, 2012). Lymph nodes act as sites for immune response bases which contain lymphocytes and also monitor the composition of lymph, spleen monitors the blood and regulates immune response, while the thymus maintains and controls the development of T-lymphocytes (Alcamo & Kruhardt, 2004).

Lymph is the fluid carried in lymphatic vessels. Lymph is similar to blood plasma and is produced when interstitial fluid (ISF) formed by the extravasation of fluid and solute from arteriole blood enters into the initial lymphatic vessels (Vincent, 2011). The blood continuously supply oxygen and nutrients and removes metabolic waste from periphery body tissues, but the exchange is indirect and is performed with ISF as an intermediary (Alcamo & Kruhardt, 2004). ISF occupies the space between cells and is in dynamic equilibrium with blood. Exchange of materials occurs by diffusion between ISF and blood through the thin epithelial walls of the arterioles. Most of the ISF returns to the capillaries which join up to form veins. Excess ISF must be transported back to the vascular space to prevent edema and

loss of tissue function, and the lymphatic system serves this purpose (Vincent, 2011). Lymph collects in the in the lymphatic vessels, where it flows one-way; from the periphery body tissues towards the heart. Since the lymphatic system is an open system and lacks a central pump, lymphatic transport is slow and intermittent. This flow is aided by valves, arterial pulsation, and contraction of smooth and skeletal muscles (Ramin, Marc & Steven, 2006). Lymph nodes are located at intervals along the lymphatic vessels. In the lymph nodes, lymph comes into contact with blood and acquires a high content of white blood cells. Lymphatic vessels from the small intestine carry the fat that has been absorbed. Lymphatic vessels empty into the lymphatic ducts, which in turn empty into the two subclavian veins (Ramin eta al., 2006).

In the lymph nodes, lymph flows in via the afferent lymphatic vessel into the sub-capsular sinus, then into the trabecular sinus and finally into the medullar sinus (Star eta al., 2012). The inter-sinus space contains macrophages which filter the lymph by trapping any foreign particles. Lymph drains from the lymph nodes via the efferent lymphatic vessel, and is carried by lymphatic vessels either to another lymph node, or to the lymph ducts from where it drains the subclavian veins. The right lymphatic duct carries lymph from the top right quadrant of the body and empties into the right subclavian vein, while the thoracic lymph duct carries lymph from the rest of the body and empties into the left subclavian vein (The Diagram Group, 2005).

The lymphatic system is important both in draining ISF to prevent edema and as a site for the body's immune system to respond to pathogens and foreign bodies. Lymph flows one way, through lymphatic vessels and drains back to the central blood circulation system. This flow is aided by contraction of skeletal and smooth muscles and arteriole pressure. Lymph nodes serve to filter the lymph and to house white blood cells which form part of the immune system.

References

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