THE ALOE VERA INFORMATION SERVICE

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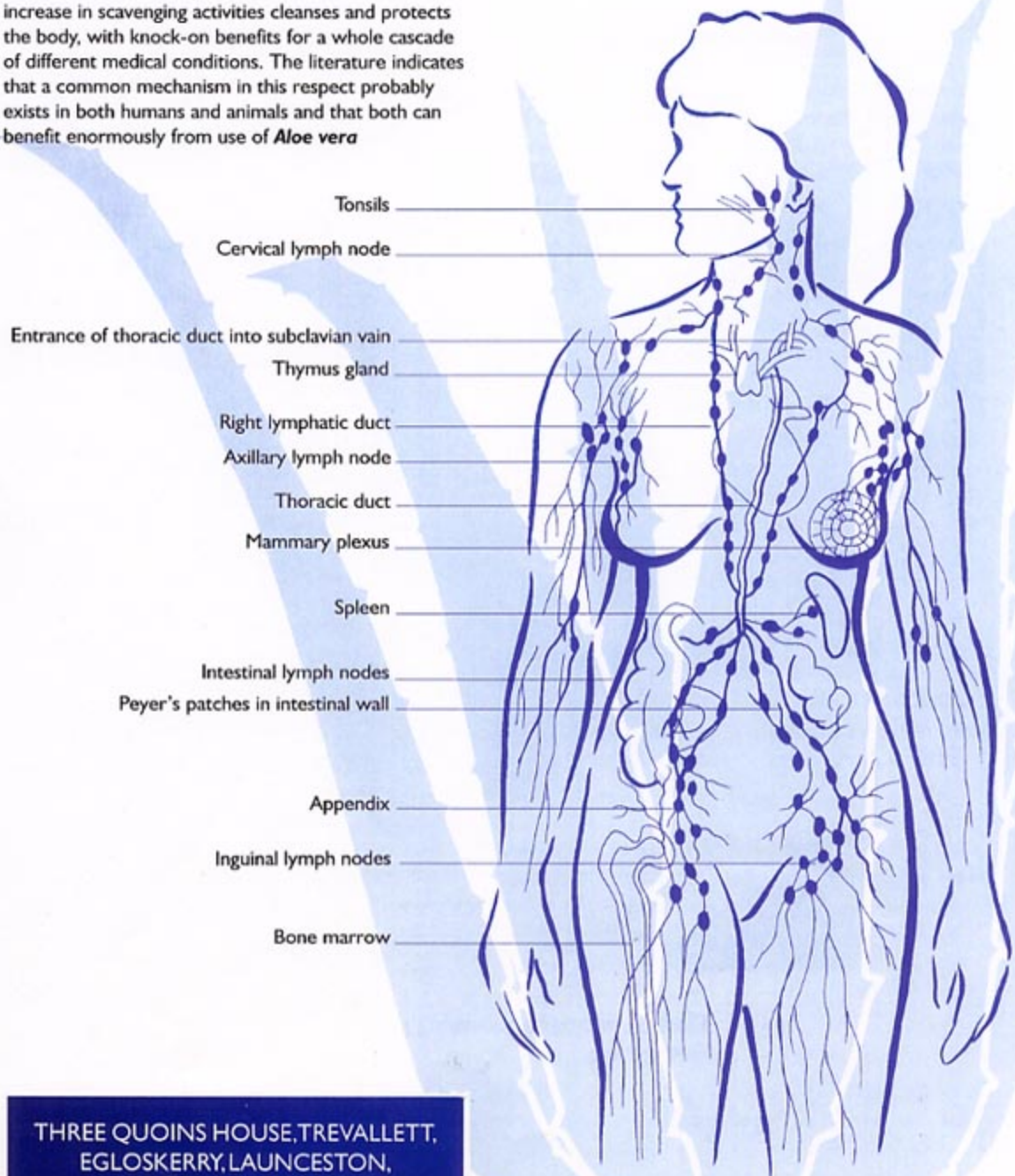
Issue 1

ALOE VERA AND THE HUMAN IMMUNE SYSTEM

Specialised molecules in ***Aloe vera*** whole leaf extract interact with some special "receptor" substances that are embedded into the outer membrane of our immune system cells. The result is that the immune system cells are galvanized into action. In particular, the class of cells known as "phagocytes" increase the activities by which they attack and then engulf bacteria, waste products and debris. This increase in scavenging activities cleanses and protects the body, with knock-on benefits for a whole cascade of different medical conditions. The literature indicates that a common mechanism in this respect probably exists in both humans and animals and that both can benefit enormously from use of ***Aloe vera***



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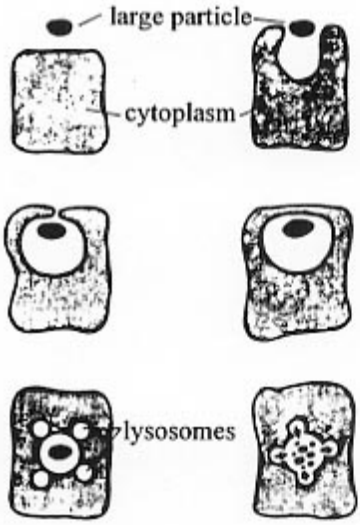
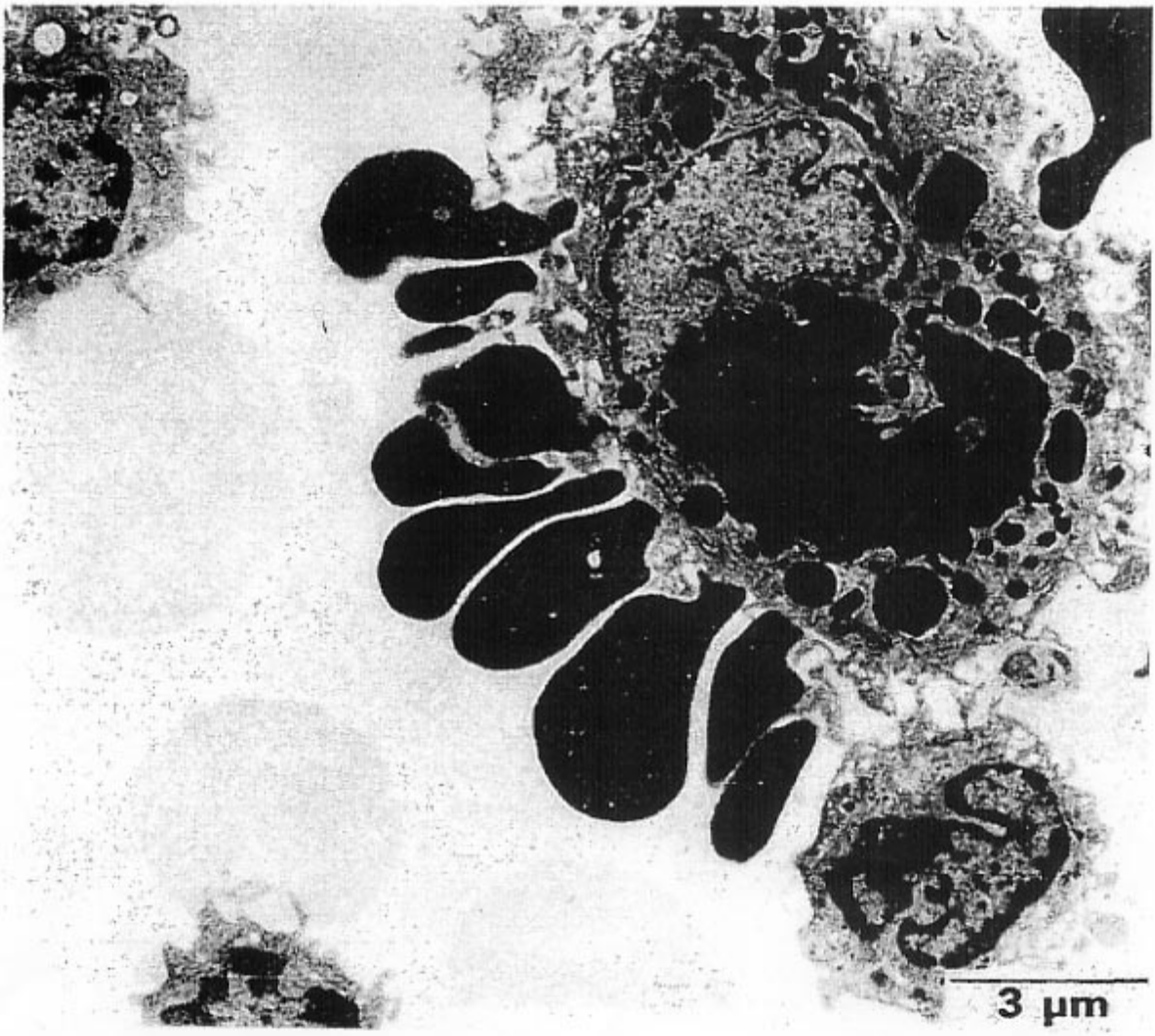


Mechanism of phagocytosis.
(a) Extracellular particle activates a specialised cell. (b) Cell sends out arms to engulf the particle. (c) Cell encloses the particle by forming a large vesicle or vacuole. (d) The vacuole moves into the cytoplasm. (e) Lysosomes attach to the vacuole. (f) Lysosomes digest the vacuole's contents.



Electron micrograph showing phagocytosis of erythrocytes by a macrophage.

THE HUMAN IMMUNE SYSTEM

The nature of the immune system and phagocytes

The Immune System provides the defence mechanisms of the body. It is concerned with defence against foreign cells and foreign substances. It involves the white blood cells (leukocytes) and some special plasma proteins called "antibodies". Very especially important are the types of white blood cells known as "lymphocytes". These cells, while they form a most important component of the white cells in the blood, they actually travel extensively within the body. Many of them, originating in the bone marrow, travel to the thymus gland, where their further development is influenced, and they then establish themselves in a number of centres around the body, especially the lymph glands in the neck, armpit and groin areas and in the spleen. Here they constitute centres of "lymphoid tissue". The tonsils and the appendix also constitute centres of lymphoid tissue and hence should be regarded as part of the immune system.

Two other very important type of cell in the body's defences, both of which are also white cells, are the "macrophage", a name derived from the Greek and really meaning "big eater" and the "neutrophil". Both of these cell types carry out the process called "phagocytosis". This is a process of engulfing foreign particles and cells, and this includes the debris from body cells which may have been killed by bacterial toxins or by environmental poisons which have found their way into the body. The engulfing process consists of the cell sending out processes of its own cell substance until they join up around the offending item and consequently draw it into the cell. Once within the cell the engulfed particle is enclosed within a membranous "vesicle" which separates it from the rest of the cell. Digestive enzymes and oxidising substances can then be poured into the vesicle from the cell to digest or otherwise destroy the offending item.

This process of phagocytosis plays an important part of the overall processes of immunity. The actual phagocytosis step is really a cleaning up operation after some of the earlier immune processes have taken place. In the earlier stages, antibody proteins are likely to have been produced against the offending item, which coat it and make it more "palatable" to phagocytosis. Also, if the offending item is a bacterial cell, or even a moribund body cell, it may have been killed by the action of "killer" lymphocytes. Nonetheless, phagocytosis is an extremely important step and can be seen as a cleansing process. The phagocytosed item is "neutralised" and ends up being destroyed and eliminated. The digestive and oxidising processes that take place within the phagocyte destroys the structure of the offending item and makes it unrecognisable as what it was. The effect is therefore both protective and cleansing. The phagocyte may even migrate to a place from which it will be eliminated, as when it migrates to an area of pus, such as a boil, and the pus is eventually shed from the surface.

Obviously, anything which can make the process of phagocytosis more effective and more active is going to be significant for the processes of immunity. Such a substance will be an immune system stimulant. *Aloe vera* is such a substance.