

EXCRETION

(Collated by Michelle Wilkinson www.movingnaturally.co.uk)

Excretion is the elimination of chemical wastes from the body most of which are unwanted products formed by metabolism in the body's cells. However, some of the substances are those which are excess to bodily needs such as water and body salts. Removal makes way for new intake.

Excretion prevents a build-up of harmful substances like toxins which in large quantities could poison the body.

The skin through sweating eliminates small quantities of waste substances from the body.

The fist-sized spleen removes bacteria, viruses and worn-out blood cells.

The liver plays an important role in bodily detoxification. It breaks down and removes a range of drugs, and other substances such as antibiotics and alcohol.

These toxifying substances are filtered through sinusoid channels which are lined with immune cells (Kupffer Cells) which digest, engulf and excrete.

The liver removes bacteria, worn-out blood cells and hormones from the blood, thus limiting the hormone's time of action.

Waste products in the liver are removed through the bile it creates and passes to the large intestine.

The liver converts ammonia into the less harmful substance of urea to be released into the blood stream and removed via filtration in the kidneys.

The prime role of the kidneys is filtration whereby unwanted wastes and surplus water are removed from the blood to form urine.

Urine is produced in a continuous trickle at a rate of 1 ml (0.002 pints) per minute. It travels from the kidneys along the ureters, two narrow tubes which join the bladder.

The bladder is a stretchy muscular storage bag which gradually fills with urine. When there is enough accumulated urine, it is released out of the body via the urethra.

The composition of urine is 95% water containing dissolved substances such as nitrogenous waste urea generated in the liver from excess amino acids. Other dissolved substances are creatinine, chloride, phosphate, potassium, sodium, sulphate ions and uric acid.

The composition of urine varies according to the condition of the body. If for instance a person is dehydrated there will be less water in their urine.

After spending 5-10 hours in the large intestine compacted waste known as faeces, formed from the digestion process, is ready for disposal.

Faeces contain a variable amount of water alongside dead gut cells, living and dead bacteria and undigested fibre. Additionally, they contain digested bile pigments which give them their colouration.

Faeces are pushed into the rectum via peristalsis and then expelled through the anus during defecation.

Preparation for defecation is made by automatic reflexes, but it begins when the outer external sphincter of the anus relaxes; a movement initiated by voluntary control.

When a person breathes in (external respiration), oxygen diffuses into the bloodstream (intermediate respiration) in the lungs to become the arterial blood that travels from the left side of the heart to the cells of the body.

The trillions of bodily cells require this oxygen for their own cellular respiration (internal respiration). This enables energy to be released from the sugars in each cell to power cellular activities.

This internal respiration also produces waste products such as carbon dioxide. These waste products diffuse into the venous blood flow (intermediate respiration) to return to the right side of the heart. From here it enters the lungs to be expelled by the body in the out-breath (external respiration).