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Assignment

Write a short note on the characteristics (and components) of urine

Urine is a sterile waste product composed of water soluble nitrogen products. This typically sterile liquid by-product of the body is secreted by the kidneys through a process called urination and excreted through the urethra. Urine is often used as a diagnostic feature for many disease conditions. The physical characteristics of urine include:

* Colour: Typically yellow-amber, but varies according to recent diet and the concentration of urine. It is an indicator for hydration.
* Smell: The smell of urine may provide health information. For example, urine of diabetes may have a sweet or fruity odour due to the presence of ketones(organic molecules of a particular structure) or glucose. This also indicates age of the urine.
* pH: The pH of normal urine is generally in the range of 4.6-8, with a typical average being around 6.0. Much of the variation occurs due to diet. For example, high protein diet results in more acidic urine, but vegetarian diet generally results in more alkaline urine(both within the typically range of 4.6-8).
* Density: This is also known as “specific gravity”. This is the ratio of the weight of a volume of a substance compared with the weight of the same volume of distilled water. The density of normal urine ranges from 0.001-0.035.
* Turbidity: The turbidity of the urine sample is gauged subjectively and reported as clear, slightly cloudy, opaque or flocculent. Normally, fresh urine is either clear or very slightly cloudy. Excess turbidity results from the presence of suspended particles in the urine, because of which can usually be determined by the results of the microscopic urine sediment examination. Urine may indicate urinary tract infection or obstruction.

Over 99% of urinary solutes are composed of only 68 chemicals which have a concentration of 10mg/L or more. 42 compounds are actually involved. They may be classified as follows:

* Electrolytes such as sodium, potassium, calcium, magnesium and chloride.
* Nitrogenous chemicals such as urea and creatinine
* Vitamins
* Hormones
* Organic acids such as uric acid
* Other organic compunds