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**DEPARTMENT; NURSINCE SCIENCE**

**LEVEL; 200**

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**COURSE; PHS 212**

**QUESTION**

**WRITE A SHORT NOTE ON THE CHARACTERISTIC AND  
COMPONENTS OF URINE**

Urine include color, turbidity (transparency), smell (odor), pH (acidity – alkalinity) and density. Many of these characteristics are notable and identifiable by by vision alone, but some require laboratory testing.

- **Color:** Typically yellow-amber, but varies according to recent diet and the concentration of the urine. Drinking more water generally tends to reduce the concentration of urine, and therefore causes it to have a lighter color. Dark urine may indicate dehydration. Red urine indicates red blood cells within the urine, a sign of kidney damage and disease.
- **Smell:** The smell of urine may provide health information. For example, urine of diabetics may have a sweet or fruity odor due to the presence of ketones (organic molecules of a particular structure) or glucose. Generally fresh urine has a mild smell but aged urine has a stronger odor similar to that of ammonia.
- **The pH** of normal urine is generally in the range 4.6 – 8, with a typical average being around 6.0. Much of the variation occurs due to diet. For example, high protein diets result in more acidic urine, but vegetarian diets generally result in more alkaline urine (both within the typical range of 4.6 – 8).
- **Density:** Density is also known as “specific gravity.” . of urine depends upon the amount of solutes present. The greater the concentration of solutes, the higher the specific gravity. Normal range for specific gravity is from 1.008 to 1.030.
- **Turbidity:** The turbidity of the urine sample is gauged subjectively and reported as clear, slightly cloudy, 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, the cause of which can usually be determined by the results of the microscopic urine sediment examination. Common causes of abnormal turbidity include: increased cells, urinary tract infections or obstructions

## Primary Components

Human urine consists primarily of water (91% to 96%), with organic solutes including urea, creatinine, uric acid, and trace amounts of enzymes, carbohydrates, hormones, fatty acids, pigments, and mucins, and inorganic ions such as sodium ( $\text{Na}^+$ ), potassium ( $\text{K}^+$ ), chloride ( $\text{Cl}^-$ ), magnesium ( $\text{Mg}^{2+}$ ), calcium ( $\text{Ca}^{2+}$ ), ammonium ( $\text{NH}_4^+$ ), sulfates ( $\text{SO}_4^{2-}$ ), and phosphates (e.g.,  $\text{PO}_4^{3-}$ )

## Chemical Composition of Urine

- Water ( $\text{H}_2\text{O}$ ): 95%
- Urea ( $\text{H}_2\text{NCONH}_2$ ): 9.3 g/l to 23.3 g/l
- Chloride ( $\text{Cl}^-$ ): 1.87 g/l to 8.4 g/l
- Sodium ( $\text{Na}^+$ ): 1.17 g/l to 4.39 g/l
- Potassium ( $\text{K}^+$ ): 0.750 g/l to 2.61 g/l
- Creatinine ( $\text{C}_4\text{H}_7\text{N}_3\text{O}$ ): 0.670 g/l to 2.15 g/l
- Inorganic sulfur (S): 0.163 to 1.80 g/l