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Pharmacology

PHS212

Write short note on the characteristics of urine

urine: A liquid excrement consisting of water, salts, and urea, which is made in the kidneys then released through the urethra.

Chemical characteristics

On an elemental level, human urine contains 6.87 g/L carbon, 8.12 g/L nitrogen, 8.25 g/L oxygen, and 1.51 g/L hydrogen. The exact proportions vary with individuals and with factors such as diet and health.

Physical characteristics that can be applied to urine include color, turbidity (transparency), smell (odor), pH (acidity – alkalinity) and density. Many of these characteristics are notable and identifiable by vision alone, but some require laboratory testing.

- Color: Typically yellow-amber, but varies according to recent diet and the concentration of the urine.
- 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.
- Density: Density is also known as “specific gravity.” The density of normal urine ranges from 0.001 to 0.035.
- 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.

Normal Urine Characteristics (Table 1)

Characteristic	Normal values
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Color	Pale yellow to deep amber
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Odor Odorless

Volume 750–2000 mL/24 hour

pH 4.5–8.0

Specific gravity 1.003–1.032

Osmolarity 40–1350 mOsmol/kg

Urobilinogen 0.2–1.0 mg/100 mL

White blood cells 0–2 HPF (per high-power field of microscope)

Leukocyte esterase None

Protein None or trace

Bilirubin <0.3 mg/100 mL

Ketones None

Nitrites None

Blood None

Glucose None