

### 4.1.1

## Urinary System Function

The kidneys filter the blood, purifying about 180 liters of plasma per day by removing metabolic products and toxins. However, only about 1% of this filtrate becomes urine and the remaining 99% is reabsorbed and reused by the system. Believe it or not, there is a medical practice termed urotherapy (urine therapy) which refers to the various applications of human urine for medicinal or cosmetic purposes. Some believe the discipline has holy origins, for in Proverbs it says: "Drink waters from thy own cistern, flowing water from thy own well" (Proverbs 5:15). At any rate, ancient Rome used urine as a teeth whitener; the French soaked socks in urine and then wrapped the socks around their neck to treat strep throat. In Mexico, to heal broken bones, people urinate into bowls of powdered charred corn and then put the mixture on the broken area. Americans will urinate on jellyfish stings, which, interestingly enough has been shown to activate the nematocysts (barbed tube that sticks into the skin) at the sting site making the pain worse. Although no scientific basis has ever been shown for medicinal use of urine, some have urinated on their own feet to help cure athlete's foot problems. Other famous people have also admitted to urinating on hands to alleviate calluses (famous baseball players) and drinking their own morning urine (various actors). Scientifically speaking however, because the kidney filters the blood, the urine becomes a useful tool, like a mirror, imaging the events of the living system. Thus, a discussion of the kidneys is really a discussion of the processes involved in urine formation, which ultimately is a discussion about the homeostatic regulation of the water and ion content of the blood. The kidneys then perform three major functions: they filter the blood removing waste products and toxins; they regulate fluids, electrolytes, acids and bases; and finally, they produce hormones that are important in regulating blood pressure.



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