pancreatic lipase and also reduce the elevation in plasma triacylglycerol levels after oral administration of a lipid emulsion. The *Ki* value of tea saponins was determined to be 0.25 mg/mL (Han et al. 2001). Thus, the crude saponin fraction from the flower buds of Chinese tea plant exhibits accelerating effects on gastrointestinal transit in mice and inhibitory effects against porcine pancreatic lipase, and three floratheasaponins (A–C) showed inhibitory effects on serum triglyceride elevation (Lee et al. 2008).

## 7.5 TRITERPENES AS ANTI-OBESITY AGENTS

Terpenes are the primary constituents of the essential oils of many types of plants and are classified by the number of terpene units in the molecule (diterpenes, triterpenes, among others). The pharmacological relevance of triterpenes has increased during the last two decades demonstrating multi-target properties such as wound healing, anti-inflammatory, antibacterial, antiviral, hepatoprotective and antitumoural effects, combined with low toxicity (Jager et al. 2009). Triterpene extracts are safe and provide a high potential for further pharmaceutical and pharmacological research (Jager et al. 2008), some of them inhibiting pancreatic lipase activity. The bark of birch trees (*Betula alba*) contains pentacyclic triterpenes (Figure 7.10). This triterpene extract is safe and provides a high potential for further pharmaceutical and pharmacological research (Jager et al. 2009), displaying an inhibitory activity on pancreatic lipase (Slanc et al. 2004).

Tremendous health concerns have been raised over a dramatic increase in the prevalence of obesity and related metabolic disorders. Considered as a major life style disorder of developed countries, obesity is prevailing at alarming speed in developing countries is because of industrialization, fast food intake and decrease in physical activity (Cairns 2005). According to the WHO, 65% of the world's population lives in countries where overweight and obesity kills more people than those who are underweight. More than 1.4 million adults (age 20 and older) were overweight in 2008. Among them, over 200 million men and nearly 300 million women were obese (WHO 2014). A vast range of health problems coexists with a weight problem and dysfunction of lipid homeostasis. This interlinked network of metabolic

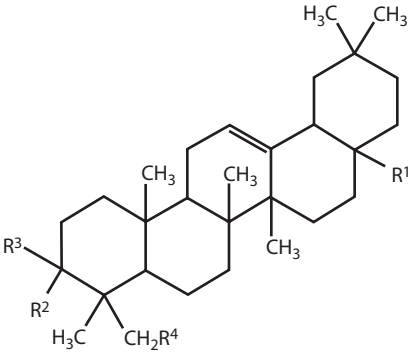


**FIGURE 7.10** Structure of pentacyclic triterpenes.