9.3.3

Thyroid Hormone Actions

Thyroid hormones act on virtually every cell of the body. They easily cross the plasma membrane and bind to nuclear receptors where they stimulate transcription of various genes (especially genes involved in cell metabolism), resulting in the production of new proteins. The end result is that the thyroid hormones have a major role in regulating metabolism. In terms of metabolism they play a key role in the metabolism of carbohydrates, lipids and proteins, the overall effect is to increase oxygen utilization. In addition, thyroid hormones are essential for normal growth and development. During development, thyroid hormones are essential for normal growth of long bones, hair and nervous tissue. Indeed, lack of thyroid hormones during early development results in short stature and mental retardation, a condition known as Cretinism. Perhaps the best way to gain an appreciation for the actions of thyroid hormones is to see what happens when they are in excess or when they are lacking. The next section will address common thyroid disorders.