Tumour-induced angiogenesis plays an important role in tumour progression. Great efforts are made to develop therapeutic strategies to interfere with this process resulting in the starvation of the tumour. However, strategies to monitor conventional therapies seems to be inappropriate to control these approaches. Thus, there is a keen interest in developing methods supplying information about the corresponding therapeutical effects. Several radiotracer-based approaches focused on different targets in the angiogenic process are currently investigated. One class of tracers is based on matrix metalloproteinases inhibitors. These compounds show promising results in in vitro assays. However, initial data from in vivo studies using murine tumour models could not confirm successful non-invasive monitoring of MMP activity yet. Another strategy uses a radiolabelled single chain fragment against the ED-B domain of fibronectin, an extracellular matrix protein. Promising results demonstrated selective accumulation of the tracer in the tumour vasculature of a murine tumour model. Most of the studies are concentrated on the development of radiolabelled antagonists of the integrin alpha(v)beta(3). This heterodimeric transmembrane glycoprotein is involved in the migration of activated endothelial cells during formation of new vessels. Different compounds have been labelled with (18F), (111)In, (99m)Tc, (90)Y and several iodine isotopes. In in vitro assays most of
them revealed high alpha(v)beta(3) affinity and selectivity. Moreover, in different murine tumour models successful non-invasive determination of alpha(v)beta(3) expression has been shown. Some of these approaches indicate that tumour-induced angiogenesis can be monitored in animal studies. Nevertheless, translation of these approaches into clinical settings allowing visualisation of tumour-induced angiogenesis in patients needs still to be demonstrated.