This thesis discusses the photodynamic therapy (PDT) and it's application for diagnostics of tumours. The PDT is based on production of reactive oxygen species (ROS) from the molecules of photosensitizers (PS). PS are preferentially accumulated in diseased tissues, where ROS are produced and cause selective destruction of the target tissue, while surrounding healthy tissue remains intact. The photodynamic diagnostics uses the fluorescence of PS for digital and spectral imaging. This thesis is focused on detection of tumours from spectral characteristics of protoporphyrin IX fluorescence induced in tissue by methyl-aminolevulinate. The main part of the research was realised on rats' scars *in vivo*, the solutions of homogenized mouse fibroblasts were also studied. The way to distinguish between diseased and healthy tissue was found using measurements of fluorescence bleaching kinetics.