

Abstract

MRI (magnetic resonance imaging) belongs to an imaging technique in a clinical practice. It is the method completely non-invasive for a patient, which allows three-dimensional imaging of the body based on the detection of hydrogen atoms of water molecules in individual tissues. Intensity of signal can be further influenced by adding a suitable contrast agent.

It is necessary to perform basic *in vitro* and *in vivo* experiments on a cell cultures and animal models before a new contrast agents will be introduced into the clinical practice. This is due to potential side effects on living organisms.

The current boom in nanotechnology offers a variety of nanomaterials including magnetic nanoparticles for decreasing the intensity of the MRI signal. The most common and longest used contrast agents for MRI are based on superparamagnetic iron oxide nanoparticles (SPIO). In this literature review will be presented uncommon types of magnetic nanoparticles which can also be used for the magnetic resonance imaging.

Key words: magnetic resonance imaging, nanoparticle, cellular imaging