Abstract

Levels of oxidation damage caused by reactive oxygen and nitrogen species is very often measured in vitro in cells. For example, measurements are performed using fluorescence probes. These substances react with certain kinds of reactive species by emitting fluorescent radiation. It is also possible to observe cellular damage of DNA, lipids or proteins. Many techniques were developed for this purpose but most of them don't provide unambiguous objective results. Measures are usually contaminated by large number of interferences. These techniques are often selective just for certain types of molecules, therefore their results do not correspond to generalized level of oxidation damage.

Topic of my bachelor thesis is optimization of selected techniques used in oxidation damage levels measurements. Specifically, determination of malondialdehyde and measurement of reactive oxygen and nitrogen species levels using DCFDA and DHR fluorescence probes. Rats primary hepatocytes were used as an experimental system for measuring. These techniques were successfully optimized and can be used for further study of antioxidation characteristics of natural flavonoid compounds in rats as model organisms.

Key words

fluorescence, probe, lipid peroxidation, lipopolysaccharide, ethanol