

1 Abstract.

L'UPTÁK, P. *Antimicrobial effect of photocatalytic effective compounds of metals*. Diploma work. Faculty of Pharmacy in Hradec Králové, Charles University, 2009. Field of study: Pharmacy,

Background This diploma work is aimed at testing antimicrobial activity coatings on the basis of photocatalytic effect of nano particles of metal dioxides. In the coats tested active nano particles of titanium dioxide alone or with zinc oxide were used.

Methods In this work we have developed a methodology, which is in the experimental part. The methodology contains three ways, in which the coats have been mutually compared on the basis of activation of UV-VIS radiation:

- A method of in advance radiated coats with antimicrobial activity for three hours.
- A method of radiation of the coats with antimicrobial activity with applied suspension.
- A method of radiation of coats in advance with microbial activity for various time periods.

The effectiveness have been tested on five microorganisms *Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Bacillus subtilis* and *Candida albicans* as the representative of eukaryotic organisms.

Results At all methods G- microorganisms were more sensitive, which showed the sensitivity even without UV-VIS radiation. After longer time periods of contact G+ organisms were well sensitive too. At short time periods of contact a negative effectiveness was showed with *Candida albicans*, which was raised later on.

Conclusions Generally better sensitiveness of G- organisms predetermines the coats with antimicrobial activity for spaces with the risk of occurrence of *Pseudomonas aeruginosa*. The sensitivity of *Candida albicans* may mean a good sensitivity of the coats against moulds. We advice the coats to be used with UV source.

Key words: Photocatalytic effect- antimicrobial activity coatings- titanium dioxide- zinc oxide.