**Article title**: In situ photoexcitation of silver doped titania nanopowders for activity against bacteria and yeasts

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**Abstract** Photocatalytic and in situ microbial activity of the amorphous and annealed states of Ag-doped and un-doped titania, were examined. Studies on their structure, morphology, composition and the photo-absorption characteristics of these materials, were performed.

These results were correlated with the photocatalytic and microbial activity against methicillin resistant Staphylococcus aureus K324 (MRSA), methicillin susceptible Staphylococcus aureus ATCC 25923 (MSSA), Escherichia coli PA 170, and yeasts Candida albicans ATCC 90028. The annealed powders containing anatase form of titania exhibited relatively higher photocatalytic activity, corresponding to activity against MRSA, when exposed to UV-A radiation. In comparison, amorphous powders, exhibited low photoactivity and showed poor antibacterial performance against MRSA under UV-A exposure. Doping of amorphous titania with Ag resulted in an anti-MRSA effect without exposure to UV radiation. In the Ag-doped crystalline anatase samples the size of Ag primary nanocrystallites increased, which led to the decrease of the surface concentration of Ag and detriment anti-MRSA activity.

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