

Modulation of *Aspergillus flavus* NRRL 3251 oxidative status by fullereneol C₆₀(OH)₂₄: the interplay of TBARS and aflatoxin production

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Aflatoxins (AFTs) are highly carcinogenic secondary metabolites of fungi genus *Aspergillus* which are produced under the oxidative and/or drought stress conditions of environment [1]. Thiobarbituric acid-reactive substances (TBARS) [2] are produced if the oxidative/antioxidative balance of the fungus cell is perturbed by reaction of free fatty acids and reactive oxidative species (ROS) [3]. One of the possible environmentally stressors are fullerenes C₆₀ and their hydroxylated derivate fullereneols C₆₀(OH)₂₄ which are part of widespread commercial products [4,5]. Oxidative stress, a pre-requisite for AFTs production, could be modulated by fullereneol C₆₀(OH)₂₄ nanoparticles, as possible antioxidants. Fullereneol C₆₀(OH)₂₄ nanoparticles caused statistically significantly decrease of AFTs production (p=0,001). There was statistically significantly correlation between TBARS production (r=0.3213, p=0.0085) and detected AFTs in YES medium. Thereby, there is significant effect of fullereneol C₆₀(OH)₂₄ nanoparticles on modulation of oxidative status of *Aspergillus flavus* NRRL 3251 after 168 hrs growth in YES microbiological medium.

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