Study on Molds Prevention Effect of Broussonetia papyrifera Milky Sap on Putty

Xu, Xingqiao (School: Beijing 101 Middle School)

Purpose: Aspergillus versicolor(A.v.), a common mold that lives indoors and outdoors can cause health problems include allergies and infections. Putty on the wall can absorb water and become a hotbed for molds to harbor. Currently there is no effective and safe anti-mold agent that could be blended in putty. In this project, I investigated if the paper mulberry sap (PMS) has anti-mold activity on A.v., studied PMS anti-mold mechanism, and further evaluated the feasibility of PMS as an anti-mold agent in putty. Procedures: Firstly, plate method was used to study the mold growth inhibitory effects of PMS in the form of liquid and powder. Secondly, the conductivity assay was adopted to investigate the possible PMS's anti-mold mechanism. Thirdly, PMS was mixed in both putty and its coating material, for the evaluation of anti-mold effect and possibility for field application. Results: Dose and time response curves were established that PMS significantly inhibited A.v. growth in the plate method. 1% PMS solution and 0.1 mg/ml PMS lyophilized powder could dramatically decrease A.v. proliferation. 0.5% PMS solution could significantly increase the conductivity of mycelia suspension in conductivity assay. For the wallboard simulation assay, regardless internal or external application, the PMS could significantly inhibit the growth of A.v. on the spore-putty coated dry wall. Conclusion: This study demonstrated first time that PMS contain anti-mold chemical, our study shown that PMS can kill A.v. and inhibit its growth significantly. One possible mechanism is that PMS can increase the cell membrane permeability of A.v.. Field simulation test demonstrated PMS application is valid against mold proliferation. In summary, PMS can be a novel agent for mold control and prevention.

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