Tree Plaster - Using of Polymers as a Drugs Release Media to Cure Wood Decay Fungi

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Problems caused by wood decay fungi have been a potential problem to the environment and society. Therefore, a novel drug delivery system, named “Tree Plaster”, has been developed to treat problem trees during early infection in this project. The system is made from a drug containing polyvinyl chloride (PVA) gel coated with polyurethane (PU) foam. Copper (II) sulphate was used as drugs to characterize the system as it has been widely used in Bordeaux mixture. The optimized composition of PVA gel was systematically based on good performance in malleability and adhesiveness tests of Borax : PVA in ratio of 7:93 with 0.25 ml/ml alcohol. On the other hand, foamed PU was made by mixing isocyanate and polyol in a ratio of 1:2. The drug releasing properties of the tree plaster was tested for 144 hours, and the stable release of drugs was achieved. The system has been proved useful as a clear zone could been seen in the in vitro anti-bacteria test, and an infected fruiting body disappeared after one month of application. To facilitate the wide application of the system, a kit has been developed for people to apply tree plaster easily. In this way, our system offers a better solution to conventional methods which simply apply drugs-containing paint to the tree. It provides three functions, as a drugs-release system, a filling agent of the damaged trunk, and protective coating to prevent further infection.

Awards Won:
Third Award of $1,000