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Isolation, classification and cultivation of bioinsecticide producing endophytes from a tropical tree: First results

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The estimated high species diversity of endophytic microorganisms and their adaption to various plant habitats suggests a rich and almost untapped source of new secondary metabolites for pharmaceutical or agricultural applications. Today a lot of interesting compounds from plants and trees are obtained via complex extractions in low concentrations. Consequently, it can be hypothesized that some of these pharmaceutical and agricultural compounds are directly produced by endophytes. All parts of a tropical tree show an array of negative effects on insects including ovipositor deterrent, anti-feedant and other inhibitory activities. That is why we want to investigate in a recently granted project if this tree contains endophytic microorganisms, if these produce bioinsecticides associated with the plant metabolism. Based on these findings, we want to develop an *in-vitro* mass-production process in a 2 L stirred tank reactor.At first, endophytes were isolated from seeds, leaves and stems of several tree samples. In only one tree 14 endophytes, bacteria and fungi, were found. All in all, over 100 endophytes have so far been isolated from different tree sources. Then, endophytic fungi and bacteria were cultivated in Sabouraud dextrose and in potato dextrose liquid media for 14 days at 150 rpm and 25°C. Terpenoid secondary metabolites that indicate the production of bioinsecticides that so far have been thought to be produced by the tree were detected in the culture broth of one bacterium and three fungi with HPLC-DAD. Furthermore, we will present first data on classification of endophytes and identification of metabolites by HPLC-DAD-MS/MS.

Biography

RiekeLohse, MSc, is working at the faculty of Engineering Science and Mathematics in the research group of Prof. Dr. Anant Patel at the University of Applied Sciences Bielefeld, Germany. From 2005 to 2010, she studied Molecular Biotechnology at the Bielefeld University and has earned a Masters degree in November 2010. Since then, she is an external PhD student at the Goettingen University and will finish her graduation with the topic “Fermentation and formulation of an entomopathogenic and endophytic *B. bassiana* strain” in 2014.

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