



Research project of counterparts funded at IPB

Name

Counterpart

Title

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B02

Isolation and selection of *Actinomycetes* with xylanase and cellulase activity

Background

Soil is a habitat dominated by microorganisms such as bacteria, fungi, algae, and protozoa. The quality and quantity of these microorganisms affect soil fertility because the microorganisms act as microbial decomposers (Rao 1995). The diversity of microorganisms is determined by the availability of food for microorganisms. Lignocellulosic litter is composed of cellulose, hemicellulose and lignin. Culture methods were used to isolate xylanolytic and cellulolytic actinomycetes.

The main objectives of this study were to isolate xylanolytic and cellulolytic actinomycetes so that they could be used in further research such as using the isolates as to produce fertilizers or to produce prebiotics.

Approach

Soil samples were collected from jungle rubber plots, rubber plantations and from oil palm plantations. The actinomycetes were isolated using HV Agar ISP4 Media. Xylanolytic actinomycetes were selected using xylan media and cellulolytic actinomycetes using CMC media. The quality of the enzymes was calculated using hydrolytic index.

Results

From the eleven samples we isolated 99 Actinomycetes. Of these 84 had xylanolytic or cellulolytic activity. The actinomycetes were grouped by colour: white, grey, dark brown, brown, black, yellow, red (figure 1).



Figure 1. Actinomycetes isolated from soil samples and grouped according to colour. From left to right: white, grey, dark brown, brown, black, yellow, red.