Poster (Painel)

421-1 **Cellulolytic bacteria from soils under extremes temperatures**

Autores: Fábio Lino Soares Júnior (CENA/USP - Centro de Energia Nuclear na AgriculturaCNPMA/LMA - Embrapa Meio Ambiente) ; Itamar Soares Melo (CNPMA/LMA - Embrapa Meio Ambiente) ; Armando Cavalcante Franco Dias (CENA/USP - Centro de Energia Nuclear na Agricultura) ; Fernando Dini Andreote (ESALQ/USP - Departamento de Ciências de Solo)

Resumo

It is believed that the survival of organisms under extreme conditions of temperature might select for differential enzymatic activity, making them a very promising source for bioprospection programs. One of the known role of bacteria in soil is the degradation of organic matter, mostly promoted by the ability in decompose cellulose-based materials. This work was focused in the isolation and identification of cellulolytic bacteria from two soils found in extreme values of temperature (from Antarctica and from the Brazilian semi-arid caatinga). The selection of cellulolytic bacteria from these soils was made by enrichments under extremes of temperature (4 or 60Â°C) in liquid media (trypic soy broth - TSB and minimum salt medium - MM), both amended with celluloses (1%). Most of isolates (119 out of 254 - 46.9%) have shown the ability to degrade carboximethyl-cellulose, indicating the presence of endoglucolytic activity, while only a minority of these isolates (23 out of 254 - 9.1%) has show the exoglucolytic activity (degradation of avicel). The obtained isolates revealed a preferential temperature for their endoglucolytic activity according to the temperature of enrichments. Also, the identification of the isolates, by partial sequencing of the 16S rRNA gene, indicated the main affiliation of cellulolytic bacteria from Antarctica soil as Bacteroidetes while the preferential occurrence of Firmicutes was observed in samples from caatinga. In conclusion, this work reports the occurrence of bacteria able to degrade cellulose-based material in soils at extreme low or high temperatures, indicating it as a still to be explored niche in the search for cellulolytic enzymes, with an enormous potentiality in the energy industry, which can have great application in environmental biotechnology processes.