

Technology Offer

Mesothermophilic and Thermophilic Myxobacteria

Reference Number
TO 02-0091

The Challenge

Myxobacteria are unique among prokaryotes with regard to their sophisticated intercellular communication systems and their morphogenetic and physiogenetic potential. To meet their nutrient requirements myxobacteria are able to decompose microbial cells and cellulose. For this purpose myxobacteria produce bioactive secondary metabolites which often show novel chemical structures or interesting mechanisms of action. Most of these compounds appear to be developed to inhibit eucaryotic competitors in the soil habitat. A great portion of these substances exhibit antifungal or cytotoxic properties. One of these substances synthesized by *Sorangium cellulosum* is the anticancer drug epothilone, which has the same mechanism of action as Taxol. Myxobacteria are usually not obtained by standard isolation techniques. Due to their special nutrient requirements all myxobacterial strains described hitherto grow very slowly and have a maximal growth temperature of about 34°C. Obviously with regard to the production of secondary metabolites by fermentation these growth characteristics of mesophilic myxobacteria are very disadvantageous. Therefore access to faster growing thermophilic or mesothermophilic myxobacteria is highly desirable. In addition, cultivation at elevated temperature is expected to reduce the risk of contamination with other organisms

The Technology



Myxobacterium, *Myxococcus*.
Source: GBF Braunschweig

The invention discloses a procedure for the effective isolation and mass cultivation of thermophilic or mesothermophilic myxobacteria and several such strains belonging to different genus of myxobacteria like *Myxococcus*, *Archangium*, *Cystobacter*, *Sorangium* and *Polyangium*. The strains exhibit increased growth rate, and are amenable to genetic modification.

Commercial Opportunity

Fast growing thermophilic or mesothermophilic myxobacteria can be used for the homologous or heterologous expression of secondary metabolites derived from myxobacteria and their production by fermentation. Besides that probably new compounds with new special properties will be identified in these strains.

Advantages of thermophilic / mesothermophilic myxobacteria are:

- increase in productivity
- reduced production time
- source for new metabolites

Patent situation

European patent filed, international applications will follow.

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