

Natural Products

Tandem Mass Spectrometry Applied to Isolation and Characterization of Natural Colorants from Actinomycetes

Jacqueline Nakau Mendonça¹, Flávia Mandolesi Pereira de Melo², Itamar Soares de Melo² and Luiz Alberto Beraldo de Moraes¹.

jacquelinem@pg.ffclrp.usp.br

¹ Departamento de Química - FFCLRP/USP

² Laboratório de Microbiologia Ambiental Embrapa - Jaguariúna

The use of colorants as additives in the food industry is a significant factor for both food manufacturers and consumers in determining the acceptability of processed food. Among the sources for natural pigments, the microorganisms provide an alternative source of naturally derived food colorants that could easily be produced in high yields by fermentation. Furthermore, the recent authorization of FDA (Food and Drugs Administration) for microorganism's food colorant has attracted many researchers to explore the extraordinary chemical diversity and microbiological biodiversity for the biotechnological production of pigments as natural food colorants¹.

The aim of this work is isolation and structural characterization of natural colorants produced by actinomycetes using liquid chromatography/mass spectrometry.

The actinomycetes named actino 12 PL, was fermented in different liquid culture medium where the medium SC (starch-casein), since excreted purple color. The extraction of the pigment was carried out by cartridge solid phase extraction (SPE) and the crude extract analyzed by direct insertion mass spectrometry in both positive and negative mode.

In positive mode, data showed the signals m/z 647, 625, 543, 527, 381 and 365. The signal of m/z 625 was assigned as $[\text{Fe}^{2+}\text{M}_3\text{-H}]^+$. Subsequently, analysis of mass spectrometry CID (collision induced dissociation) and isotopic pattern of iron confirmed the structure of the iron complex. The search in the database Dictionary of Natural Products indicated an iron complex which was characterized as Ferrerosamine A.

[1] Mapari, S. A. S.; Nielsen, K. F.; Larsen, T. O.; Frisvad, J. C.; Meyer, A. S.; Thrane, U. *Current Opinion in Biotech.* **2005**, 16, 231 – 238.