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Liamocins, sophorolipids and frost grape polysaccharides

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The USDA's National Center for Agricultural Utilization Research has a prominent history in carbohydrate research including the development of xanthan gum, 'super slurper' polysaccharides, beta-dextrans, alternan and beta lactamase antibiotics (penicillins) as well as analytical tools such as aldononitrile acetates. This presentation will focus on three more recent innovations: Sophorolipid bio-surfactants; liamocin anti-microbial agents and frost grape polysaccharide. Sophorolipids (SLs) can be produced by fermentation often in high yield (50-400 g/L) by yeasts of the *Starmarella* clade. The SLs are composed of a sophorose sugar head group (Glc-beta-1, 2-Glc) glycosidically attached to a hydroxyl fatty acid. In a MALDI-TOF MS-based screen of *Starmarella* yeast we found that *Candida kuoi* NRRL Y-27208 produces non-lactone type SLs in which the sophorose is O-linked to ω-hydroxy fatty acids. Unlike the more common lactone-type SLs, these novel SL's have an open chain structure that confers low-foaming bio-surfactant properties. The liamocins are novel polyol-lipids from a black yeast-like fungus *Aureobasidium pullulans*. Four liamocins have been characterized from *Aureobasidium* NRRL 50380 that contain a mannitol head-group linked to several polyester-linked 3, 5-dihydroxydecanoate acyl chains. Two of the liamocins are also 3'-O-acetylated and all four have pronounced antimicrobial properties. A new, high molecular weight polysaccharide has also been found to be produced by the frost grape (*Vitis riparia*) and the structural characterization and properties of this will also be presented and discussed.

Biography

Neil P.J. Price has a PhD from the University of London and has Postdoctoral experience at the University of Geneva in Switzerland, Paul-Sabatier University in Toulouse and the Complex Carbohydrate Research Center in Athens. He held a Faculty Position the University of Rochester, NY before moving to the NCAUR, Peoria. His research includes carbohydrate chemistry and biochemistry, mass spectrometry and microbial metabolism. He currently serves on the ARS National Chemical Patent committee and has over 90 peer-reviewed research publications.

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