3rd World Congress and Expo on Applied Microbiology November 07-09, 2016 Dubai, UAE

Culture matters: Do spores talk with each other?

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It is well established that productivity of some commercially important fungal products is dependent upon the original number of spores as inoculum. An example of this is the filamentous fungus, *Aspergillus niger*. Inoculum numbers below 108 spores/ml result in pellet morphology, desirable for citric acid production, above this, is ideal for pectic enzyme production. Therefore morphology and subsequently, productivity, can be manipulated by altering inoculum size. The mechanism behind this phenomenon is of interest, as the number of spores present within a given environment may represent a quorum-sensing event. Quorum sensing is a response and communication mechanism in microbes; it is shown to have an effect on physiological activities. This communication system can be implemented as a strategy for overproduction of microbial products that are of commercial importance. Butyrolactone-I is a known self-regulating agent involved in morphological differentiation and secondary metabolism in some bacteria. In fungi, specifically, *Aspergillus terreus*, it is classified as a quorum sensing molecule and has proven effects on variety of microbial cultures. This work focused on potential effects of a range of quorum sensing molecules/inducers on spore germination and the development of subsequent cultures in liquid media. Spores were harvested from *Aspergillus terreus* cultures. Inoculum concentrations of 103 and 107 spores/ml were added to complex and defined media supplemented with various additives, including quorum sensing molecules e.g., butyrolactone-I and other medium composition enhancers. Morphological differences were seen between high and low spore numbers but not between low spore numbers and the additives.

Biography

Mahek Merchant is currently a PhD student in Biotechnology at University of Westminster, UK. She has MEng degree in Biochemical Engineering from University of Westminster, UK.

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