

PS2: 59

Surface hydrophobicity of solid culture and water biofilm of filamentous fungi

Virginia Medeiros Siqueira, Nelson Lima

IBB/Centre of Biological Engineering, Portugal

Fungi are known to produce hydrophobins which are small proteins localised on the outer surface of cells and are involved in several functions in fungal growth and development. Due to characteristics such as dimorphic growth, variety of size and shape of hyphae and spores, and a complex cell wall of filamentous fungi, microsphere adhesion assay (MAA) is said to be the best method to assess cell hydrophobicity. However, contact angle measurement (CAM) is the most common technique applied. This work aimed to perform MAA and CAM to study hydrophobicity of solid cultures and water biofilms of *Penicillium expansum* and *Penicillium brevicompactum*. Contact angles of 7 and 21 days aged solid cultures grown on Malt Extract Agar (MEA) and Water Agar Glucose media (WGA), and 7 and 21 days aged biofilms grown in Malt Extract Broth (MEB) were measured. MAA was applied in 7 and 21 days aged biofilms grown in MEB. As result, both species in solid cultures and 21 days aged biofilms were classified as hydrophobic with contact angles $> 90^\circ$. In contrast, for both species, biofilms with 7 days were classified as hydrophilic with contact angles $\leq 90^\circ$. When MAA was applied, water biofilms showed different levels of hydrophobicity and was found that biofilms have specific hydrophobic hyphae which may be involved in fungal ecological functions. In conclusion, CAM showed to be more useful to assess hydrophobicity on solid cultures, and MAA was more proficient to assess directly the cells surface hydrophobicity and was useful for characterise different zones of hydrophobicity within the biofilm.