**Tannia starch: functional and structural characterisation**

M Dimopoulou1, C-K Mouzakitis2, CG Biliaderis2 and V Kontogiorgos3

*1School of Health and Life Sciences, Teesside University, Middlesbrough, UK*

*2Department of Food Science and Technology, School of Agriculture, Aristotle University of Thessaloniki, Thessaloniki, Greece*

*3Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada*

Tannia (*Xanthosoma sagittifolium*) is an underutilised tropical tuber crop with significant potential as a sustainable source of starch for food and industrial applications. This study presents a comprehensive characterisation of tannia starch, focusing on material preparation before and after extraction. The extraction process employed a combination of mechanical and physicochemical methods designed to preserve the starch’s native properties while ensuring minimal structural alteration. A series of analytical techniques, including light and polarised microscopy, particle size analysis, differential scanning calorimetry (DSC), SEM, FTIR and amylose content determination, were employed to investigate the starch’s structural, thermal, and compositional attributes. Pasting properties were also examined, where the extracted starch displayed a peak viscosity of 2573 cP, a moderate setback viscosity of 1170 cP, and a pasting temperature of 70 °C, indicating a unique balance between thermal stability and retrogradation tendency. Microscopic analysis revealed well-defined granule morphology with an average particle size of 3 μm. DSC highlighted a gelatinisation temperature greater than that of other traditional tuber starches (Tm ~ 83 oC, *Δ*Η ~ 14 J/g solids for heated 30% w/w aqueous dispersions) such as potato (Tm ~ 63 oC) and tapioca (Tm ~ 67 oC); a minor second order-like transition before crystallite melting also occurred, indicative of the glass transition of the amorphous material of granular starch. These attributes underscore tannia starch’s potential as a versatile and sustainable alternative for applications in food systems and beyond, particularly in regions with limited resources or specialised functional requirements.

**ORAL PRESENTATION**