Contribution ID : **49** Type : **Oral**

Nuclear techniques for combating food fraud and authenticating quality

Monday, 2 December 2019 16:00 (15)

According to World Health Organisation of the United Nations, approximately 600 million people are affected by food contamination, which leads to around 420,000 deaths per year. Human health has been placed at risk by the presence of pathogens and other chemical substances found in food. Australia is one of the leading importers and exporters in the Australasian region. However, importing and exporting food can lead to food fraud. This is when fraudulent businesses substitute produce, along the supply chains, with ones of lower value and quality in order to increase profit margins. This type of food fraud is estimated to cost the global food industry between $30 to 40$ billion USD per annum. Consequently, food safety and traceability are increasingly important to regulatory bodies, the industry and consumers. While several methods are available to combat this widespread issue, there are no comprehensive techniques which can accurately determine both the production methods and geographic origins of food.

To combat food fraud and authenticate quality, the Australian Nuclear Science and Technology Organisation (ANSTO) is leading a food provenance research project in partnership with universities, industry and government agencies in order to develop a tool that will determine the source and origin of produce and authenticate quality. ANSTO is in a unique position where its multi-platform capability can play a vital role in food safety and traceability. Nuclear techniques such as stable isotope analysis, x-ray fluorescence through Itrax, neutron activation analysis and ion beam analysis can provide greater precision than conventional methods when determining the provenance of food. The specific isotopic and elemental fingerprints of a product can be linked to the location where it was produced. The initial testing of the technology on seafood produce and bushfood found that it could authenticate provenance with greater than 80% accuracy overall.

The collaborating organisations are now working to improve the efficiency of their methods in conjunction with cutting edge food quality analyses through the support of the National Measurement Institute. This research will help regulatory bodies to scientifically-validate the source of origin of food and assess its quality. Furthermore, this method can serve as a marketing and brand protection tool. A large amount of Australian produce is exported overseas and sold as high-quality produce, where it can be subject to fraud. This method will help Australian industries in protecting their unique brand. Authenticating the origin and production methods of food will also allow consumers to make informed decisions and help them support their local industries.

Speakers Gender

Male

Travel Funding

No

Level of Expertise

Expert

Do yo wish to take part in the poster slam

No

Primary author(s) : Prof. MAZUMDER, Debashish (Australian Nuclear Science and Technology Organisation); GOPI, Karthik; Prof. SAMMUT, Jesmond (The University of New South Wales); Prof. SAINTILAN, Neil (Macquarie University); Dr CRAWFORD, Jagoda (Australian Nuclear Science and Technology Organisation); Ms

GADD, Patricia (Australian Nuclear Science and Technology Organisation); Mr STOPIC, Attila (Australian Nuclear Science and Technology Organisation); Dr ATANACIO, Armand (Australian Nuclear Science and Technology Organisation,); STOCKHAM, Katherine (National Measurement Institute)

Presenter(s) : Prof. SAINTILAN, Neil (Macquarie University)

Session Classification : Session 9

Track Classification : Food, pharmaceuticals and radiotherapy