Future Starches for the Food Industry

Riddet Institute is a Centre of Research Excellence (CoRE) funded by New Zealand government for research on food science and nutrition and is hosted by Massey University. At the Riddet Institute, I do research on functional food chemistry with special emphasis on starch and other carbohydrate based foods. Starch is the commonest storage carbohydrate in plants and also the largest source of carbohydrates in the human food. Development of healthy future foods based on healthy starch is an emerging concept that can impact significantly on the future food industry. With increasing health awareness and demand for novel functionality, the demand for starches with good health benefits and novel functionality has increased significantly. Starch and starchy food products can be classified according to their digestibility, which is generally characterized by the rate and the duration of the glycemic response. Factors such as starch granule morphology, amylose to amylopectin ratio, molecular structure, degree of branching in terms of steric hindrance and consequently mass transfer resistance and their effects on the digestibility and absorption of digested carbohydrates are important while developing new food products. Novel starch structures produced by different techniques may provide better nutritional and functional characteristics than native starches. The physical state of the starch ingested has a major impact on the digestibility therefore effects of processing techniques and starch modification can affect the starch digestibility. The other constituents of food matrix, such as proteins, lipids and polysaccharides play a significant role during processing which affects the physico-chemical characteristics of digesta and the final digestibility of starch in the gastro-intestinal tract.