

FOOD CHEMISTRY & NUTRITION

July 24-26, 2017 Vancouver, Canada

Factors affecting functional properties of aquafaba, water recovered from commercially canned chickpeasRana Mustafa¹, Youn Young Shim^{1,2}, Jianheng Shen¹, Kornsulee Ratanapariyanuch¹ and Martin JT Reaney^{1,2}¹University of Saskatchewan, Canada²Prairie Tide Chemicals Inc., Canada

Pulses have long been noted for their functional properties and are broadly used in many food applications to replace animal protein. Increasingly vegetable sources are being developed that emulate meat, milk and eggs. The cooking water obtained after chickpeas or other pulses are steamed, canned or boiled is called as aquafaba which contains components that can introduce foaming, emulsifying and thickening properties. These components can produce stable foams and emulsions that are similar to those achieved by egg and milk proteins. There is little information describing either the composition of aquafaba or the contribution of specific components to its foaming properties. The purpose of this study is to determine the factors influencing the foaming properties of aquafaba. Here we compare the rheological properties and the chemical composition of aquafaba from commercial chickpea brands studied by NMR, electrophoresis and peptide mass fingerprinting. Our results showed that foaming capacity and stability of chickpea aquafaba from different commercial sources differ greatly and that these differences might be due to aquafaba composition. Aquafaba viscosity and moisture content were positively correlated but these factors did not relate to foam volume increase ($V_{f_{100}}$). Aquafaba derived from commercial chickpeas canned with neither salt nor disodium EDTA were more viscous and produced more stable foams than samples derived from chickpeas canned in the presence of these additives. In addition, aquafaba proteins were largely known as heat soluble hydrophilic species. NMR analysis revealed that the foam contained mainly polysaccharides, sucrose and protein. Based on our results it appears that the quality of aquafaba is affected by processes used in canning. The home user could select a product of store-bought chickpeas that produce the most concentrated solution. Within the products tested, it is possible to recommend that the consumer select a product that was canned without salt or EDTA. In the future, it is likely possible that aquafaba can be standardized in commercial products so that product performance is reliable.

Biography

Rana Mustafa is a Researcher in the Department of Plant Sciences at the University of Saskatchewan. She obtained her MSc and PhD in Food Biotechnology and Processing from the National School of Agronomy and Food Sciences (ENSAIA) at the University of Lorraine (France). She has special expertise and interest in innovating traditional foods and converting them into healthy marketable products. She has built this expertise over several years of research and teaching at universities in France, Syria and Canada. Her current research activities predominantly include, formulation of new products from chickpea and faba bean.

rana.mustafa@usask.ca

Notes: