conferenceseries.com

Sahar Jazaeri et al., J Exp Food Chem 2017, 3:2 (Suppl)
DOI: 10.4172/2472-0542-C1-008

A tomato-processing induced lycopene-pectin hydrocolloidal structure

Sahar Jazaeri[1,2], **Abdorreza Mohammadi**[1], **Gopinadhan Paliyath**[2] and **Yukio Kakuda**[2]
[1]Shahid Beheshti University of Medical Sciences, Iran
[2]University of Guelph, Canada

Tomato juice and paste are special type of dispersions, composed of suspended particles (pulp) dispersed in a colloidal liquid medium (serum), which can be separated by high speed centrifugation. The bright red appearance of soluble solid fraction separated by high speed centrifugation denoted the presence of lycopene in this fraction. Since lycopene is a hydrophobic compound it is not expected to appear in the water-soluble fraction. HPLC analysis indicated presence of substantial amount of lycopene in soluble fraction and confirmed by the appearance of lycopene crystals when observed under Transmission Electron Microscope (TEM). Considerable amount of pectin in the soluble fraction led to hypothesis that pectin facilitated the formation of hydrocolloidal system of suspended lycopene during processing. Enzyme treatment confirmed this hypothesis when pectinase effectively disrupted colloidal system and precipitated lycopene, while protease and cellulase treatment was ineffective. Necessity of the divalent ions to retain the suspension signified the electrostatic interactions in the matrix surrounding lycopene crystals. The presence of peptides in the soluble solids fraction further suggested that association between lycopene and hydrophilic compounds was facilitated by these amphiphilic peptides. Reconstitution of pectin-lycopene was not able to create associations as observed in the soluble solids fraction. Evidently, the hydrophobic lycopene molecules can interact with hydrophobic moieties on the peptide molecules to form complexes which can form a soluble complex in the presence of pectin, where the positively charged groups on the peptide could bind to the negatively charged pectin.

Biography

Sahar Jazaeri has competed her master's degree focused on the chemical/rheological effects of food process followed by more in depth investigation on these effects in cereal industry during her PhD program at University of Guelph, Canada. Acknowledging differences in preference for technology and ingredients around the world, she transfers knowledge and technological information between developing countries which prefer traditional process/natural ingredients and developed countries with more technological and artificial ingredients preference. As an Assistant Professor, she is conducting international projects highlighting the importance of technical approach and ingredients as well as realizing the chemistry behind authentic materials and their functionalities on emerging food products.

saharJazaei@gmail.com

Notes: