OMICS Group Conferences
Accelerating Scientific Discovery

Global Biofuels & Bioproducts Summit

November 19-21, 2012 Hilton San Antonio Airport, USA

Exploration of the world of neglected dimensions and elucidation of the peculiar nature of a water treatment protein from *Moringa oleifera* seeds

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Water treatment is a serious challenge in both developed and developing countries. Aluminium salts, iron salts and synthetic polymers are the commonly used coagulants in the treatment. The nature and mechanism of water treatment for protein extract from *Moringa oleifera* (MO) seeds currently being advocated for an alternative to chemical is not well understood. Lack of such information or data compromises the interpretation of biophysical parameters and its use in water treatment. The coagulant protein extracted has a molecular weight of about 7 kDa and isoelectric pH between 10 and 11. The studies done address the fundamental colloidal questions about the protein from MO seeds. A number of techniques have been used to study the physicochemical and conformational properties of this protein in aqueous solution and these include: surface tension, UV-Vis spectroscopy, densitometry, fluorescence, fourier transform infrared, circular dichroism, capillary viscometry, amino acid composition and elemental analysis, neutron reflection (NR), zeta potential, turbidity and dynamic light scattering (DLS). The techniques have been able to elucidate structure (primary, secondary and tertiary), conformational states and physiochemical properties as function of microenvironment (i.e. pH, ionic strength and added surfactant) and the adsorption of the protein on silicon oxide and the effects of an anionic surfactant sodium dodecyl sulphate (SDS) The NR data measured at ILL, Grenoble (France), was used to determine the structure and composition of interfacial layers at the solid/solution interface. Zeta potential, turbidity and DLS measurements were done at Uppsala University (Sweden).

Biography

Habauka M. Kwaambwa has completed his Ph.D. and postdoctoral studies from the University of Bristol (UK). He is the coordinator of the Natural Sciences Unit in the School of Health Applied Sciences of the Polytechnic of Namibia. His research interest is in surface chemistry and colloids of soft matter and has published in reputed journals. For instance, he published over 10 papers since 2004 in the use of *Moringa oleifera* seeds protein for water treatment.

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