

## International Summit on Current Trends in Mass Spectrometry July 13-15, 2015 New Orleans, USA

## Mass spectrometric methods to support vitamin A policies in Africa

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Vitamin A is an essential nutrient important for vision, reproduction, immune function, and cellular differentiation. Vitamin A status assessment is not straightforward. Serum retinol (vitamin A) concentrations are homeostatically controlled over a broad range of liver vitamin A concentrations, which are how vitamin A status is defined. Moreover, infection and inflammation decrease circulating retinol concentrations further confounding assessment. Retinol isotope dilution (RID) methods using a variety of mass spectrometric techniques are gaining momentum on the continent of Africa. A recent study in Zambia used <sup>13</sup>C-labelled retinyl acetate to assess total body vitamin A stores in preschool children. Surprisingly, a large percentage of the children were diagnosed with hypervitaminosis A (>1 µmol retinol/g liver). This was supported by hypercarotenemia and slightly elevated retinyl ester concentrations. In fact, the children in two of the villages experienced hypercarotenodermia during mango season the following year. These findings were attributed to vitamin A adequate dietary intakes, five years of high-dose vitamin A-fortified foods. In order to ensure that neither deficiency nor hypervitaminosis prevails, countries will need to adopt sensitive RID mass spectrometric methods to assess total body vitamin A stores in carefully selected groups that represent all population strata that are exposed to multiple vitamin A programs. The International Atomic Energy Agency has recently invested in three gas chromatography-mass spectrometers in Africa to further support the use of RID methods on the continent using deuterium and <sup>13</sup>C.

## **Biography**

Sherry A Tanumihardjo manages a research team studying vitamin A and carotenoid metabolism, serves as Director of the Undergraduate Certificate in Global Health, and teaches at the undergraduate and graduate levels including international field experiences. She is on the Executive Board for the UW Global Health Institute. She has more than 150 publications and chapters. She has presented at more than 200 domestic and international meetings. She has served as a reviewer for many journals.

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