

## 5<sup>th</sup> World Congress on **Cancer Therapy**

September 28-30, 2015 Atlanta, USA

### Development and preclinical testing of protein-based curcumin delivery forms for control of cancer

**Lissy Krishnan**

Sree Chitra Tirunal Institute for Medical Sciences and Technology, India

This lecture will address properties of plasma protein-based drug delivery systems with immense potential as anticancer agent. Curcumin (diferuloylmethane) is a well proven anti-inflammatory, anti-oxidant and anticancer natural molecule with little clinical outcome due to poor aqueous solubility and lack of bioavailability. Different approaches being attempted for effective delivery of this valuable drug at the affected site have not shown better clinical outcome. Recently, two drug delivery forms were developed using human proteins as drug carrier for: (i) local sustained release from fibrin matrix; (ii) systemic application as highly soluble Curcumin-albumin (Curc-Alb) conjugate. Potency of the curcumin released from fibrin and Curc-alb on in vitro proliferation and apoptosis were demonstrated using cancer cell lines, in vitro. Subsequently safe and efficient use of the delivery systems for tumor prevention and reduction was demonstrated using Dalton's lymphoma ascites (DLA) model in rats. Curcumin was non lethal/toxic when high acute dose was administered using both delivery forms. Sub-acute dose did not alter; liver/kidney functions as compared to normal controls. Drug administration aimed both tumor reduction and prevention of metastasis and in both the protocols it was comparable to the effect of standard drug doxorubicin. Remarkable reduction in tumor volume, tumor cell number and increase in mean survival time as compared to untreated tumor controls was observed and was similar to the action of standard drug. So the curcumin delivered in both forms appears safe and effective for human use. The potential of the drug and delivery systems for limited clinical trials will be discussed.

#### Biography

Lissy K. Krishnan focuses her research on development of various biotherapeutics from small pool human plasma meeting International regulatory requirements for clinical use. Her approach to use various compositions of cell-specific fibrin matrix as an in vitro niche for human adult stem cell has resulted in their selection to homogenous population and differentiation into various cell types for use in regenerative medicine. She has also designed fibrin-based niche for in vivo delivery of partially differentiated cells for various cell-based therapy. She has developed two drug delivery systems using human plasma proteins; (i) albumin for systemic and (ii) fibrin for local curcumin delivery aiming at increasing bioavailability for cancer therapy. She also designed in vitro engineered cancer tissue using lung cancer cell and biodegradable scaffold to be used as model for testing anticancer effect of curcumin. She is the senior author of several peer reviewed publications, book chapters, conference proceedings, reviewed many manuscripts for various journals, serves in editorial boards, in project review committees of national funding agencies and is the primary inventor of national/International patents.

[lissykk@sctimst.ac.in](mailto:lissykk@sctimst.ac.in)

#### Notes: