

## Palm tocotrienols inhibit proliferation of murine mammary cancer cells, enhance immune response and induce expression of IL-24 mRNA

Kanga Rani Selvaduray<sup>1,2</sup>, Ammu K. Radhakrishnan<sup>2</sup>, Methil Kannan Kutty<sup>3</sup> and Kalanithi Nesaretnam<sup>1</sup>

<sup>1</sup>Malaysian Palm Oil Board, Malaysia

<sup>2</sup>International Medical University, Malaysia

<sup>3</sup>University Technology MARA, Malaysia

Several mechanisms have been postulated for the anti-cancer effects of tocotrienols. In this study, the anti-cancer mechanism of tocotrienols is for the first time linked to increased expression of interleukin-24 (IL-24) mRNA, a cytokine reported to have anti-tumor effects in many cancer models.

The anti-proliferative effects of tocotrienol-rich fraction (TRF) from palm oil,  $\gamma$ - and  $\delta$ -tocotrienol ( $\gamma$ -T3 and  $\delta$ -T3) and  $\alpha$ -tocopherol ( $\alpha$ -T) were studied on 4T1 murine mammary cancer cells. TRF,  $\gamma$ -T3 and  $\delta$ -T3 significantly inhibited the growth of the 4T1 cells with IC50 values of 8.99, 4.79 and 3.73  $\mu$ g/ml respectively. Tumor incidence and tumor load in BALB/c mice were decreased by 57.1% and 93.6% respectively ( $p < 0.05$ ) with TRF supplementation. Tumorigenesis was examined and compared against control in both nude and BALB/c mice models. The mice were injected with MDA-MB-231 and 4T1 cells respectively for the different models, and were fed with TRF by oral gavage. This study shows that palm tocotrienols have strong inhibitory effects on the growth of both MDA-MB-231 and 4T1 cells both *in vitro* and *in vivo*.

krani@mpob.gov.my