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14-3-3 proteins as potential biomarker for *in vivo* anticancer mechanism of *Streblus asper* extract against cervical cancer

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Cervical cancer is the fourth most common cause of cancer death affecting women worldwide. Every year, 528,000 new cases of cervical cancer have been reported globally. Different measures have been suggested to prevent cervical cancer. These include the use of natural plant extract which is known as *Streblus asper*. *Streblus asper* is known to have a beneficial effect against many cancers like osteosarcoma, tongue carcinoma, mouse lymphocytic leukaemia p388 cells, and human nasopharyngeal epidermoid carcinoma (KB cell). The present study attempted to identify the key protein associated with *in vivo* anticancer mechanism of *Streblus asper* against cervical cancer. *Streblus asper* extract was used as drinking water at certain doses, all SCID mice were sacrificed after several weeks, and tumour tissues were analysed for protein identification and expression using label-free quantification of nano Liquid Chromatography-Mass Spectrometry (LCMS). Among 128 proteins found, four proteins were associated with 14-3-3 protein family (β isoform, γ isoform, ζ isoform, and τ isoform). 14-3-3 protein is a regulatory protein that play significant roles in signal transduction, apoptosis, cell cycle progression and DNA replication. These four isoforms of 14-3-3 protein (β , γ , ζ , τ) had been found by previous studies to be overexpressed in cancers like breast and lung. Interestingly, our bioinformatics analysis revealed that the expression of four isoforms of 14-3-3 protein were significantly down regulated following *S.asper* treatment. This result was validated by the combination of gel electrophoresis and protein sequencing analysis. The findings provide an insight into the role of 14-3-3 family proteins as an important biomarker for cervical cancer treatment.

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