

## **DBT-Rajiv Gandhi Centre for Biotechnology (RGCB), Thiruvananthapuram**

DBT-RGCB scientists discover a new lead molecule against skin cancer

*Wrightia tinctoria* (Pala Indigo) a well-known medicinal plant used in Ayurveda for its activities against various skin ailments including dermatitis and psoriasis. Dr. Ruby John Anto and her team at the Department of Biotechnology's Thiruvananthapuram-based Rajiv Gandhi Centre for Biotechnology (DBT-RGCB) are focusing on isolation and characterization of potent anti-cancer compounds from plants. One of the plants screened for this purpose was *Wrightia tinctoria*. Bioactivity guided fractionation of the dried leaves of the plant yielded an active fraction, DW-F<sub>5</sub>, with potent anti-melanoma activity. *In vitro* and *in vivo* studies validated the safety of this extract and its efficacy on curbing melanoma. Further purification of DW-F<sub>5</sub> yielded an aromatic compound, tryptanthrin and an uncharacterized aliphatic fraction. Dr. Anto and her team showed that the compound possessed anti-cancer activity towards skin cancer. Orthotopic melanoma xenograft models and tail vein metastasis models proved the exceptional anti-tumor and anti-metastatic potential of tryptanthrin. The molecule was found to differentially regulate the expression of various survival signals like MAPK, AKT, STAT3,  $\beta$ -catenin/WNT signal and the melanoma specific signaling, MITF-M. Tryptanthrin is therefore an excellent chemotherapeutic lead molecule against malignant melanoma. Currently, the team is focused on synthesizing structural analogues of tryptanthrin, with improved potency and bioavailability.

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