

***FLUEGGEA LEUCOPYRUS (KATUPILA) SHOWING ANTI-TUMOR
ACTIVITY AGAINST PLANT TUMORS USING AGROBACTERIUM
TUMEFACIENS***

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It is reported half the world's best-selling pharmaceuticals are either natural products or their derivatives. 'Katupila' (*Flueggea leucopyrus*) is extensively used in the treatment of cancer and tumors in traditional Ayurvedic medicinal practice in Sri Lanka. To study the antitumor activity and the medicinal importance of 'Katupila', the "antitumor disc bioassay" an initial method of detecting antitumor activity of plant extracts, was done using the plant pathogenic bacterium *Agrobacterium tumefaciens* which has the ability to induce tumors in plant cells.

Plants were collected from Anuradhapura and Kurunegala areas and their methanol and aqueous extracts labeled as Anuradhapura methanol extract (Am), Kurunegala methanol extract (Km), Anuradhapura aqueous extract (Aaq) and Kurunegala aqueous extract (Kaq), which were assessed in a series of bioassays. Cytotoxicity was tested with the Brine shrimp assay. Antibacterial activity was studied against some selected common human pathogens and four strains of isolated *A. tumefaciens* using the agar dilution method. The anti-tumor property was studied by the carrot disc assay using *A. tumefaciens* with 'Katupila' extracts. Anti-cancer drugs, Cisplatin and Vincristin were used in an antitumor comparative study.

The extracts showed moderate and weak cytotoxicity. Aqueous extracts showed a higher cytotoxicity than methanol extracts (Aaq LC₅₀=116.203 ppm, Km LC₅₀=964.340 ppm). The extracts (10000-1250 ppm) showed significant growth inhibition against *Escherichia coli* NCTC 10418, *Pseudomonas aeruginosa* NCTC 10662, *Staphylococcus aureus* NCTC 6571, *Staphylococcus aureus* ATCC 25923, and 2 clinical isolates of methicillin resistant *Staphylococcus aureus* (MRSA) while no antibacterial activity was observed against *A. tumefaciens*.

As there was no antibacterial effect against *A. tumefaciens*, the same concentrations of extracts were used in the anti-tumor assay. 'Katupila' extracts showed more than 90% tumor inhibition while Cisplatin, Vincristin showed 100% tumor inhibition on carrot discs. Therefore, our results strongly indicate that 'Katupila' (*Flueggea leucopyrus*) has high medicinal value with less cytotoxicity, significant antibacterial activity against some human pathogens and anti-tumor activity in plants. With more than 90% tumor inhibition in carrot, the anti-tumor property of *Flueggea leucopyrus* is confirmed. Therefore, *Flueggea leucopyrus* and isolates of its active compounds should be evaluated with further studies for anti-tumor activity.