ABSTRACT

**Background:** Survey of literature and documentation of tribal knowledge reveals that various parts like roots, leaves, bark and flowers of *Diospyros* species are found to be used in tribal medicine for its different pharmacological activities, especially in treatment of tumours, warts, wounds which may be considered to be sign of cancer. The present study involves exploration of three unexplored diospyros species from Western Ghats of Karnataka for their dynamic biological profile i.e. anticancer, isolation and characterisation of their important constituents.

**Objective:** The current study is devised to evaluate the phytochemical and anticancer profiles of the extracts and isolates of the selected unexplored medicinal species reaffirm the folklore claims.

**Materials and Methods:** The preliminary phytochemical investigation was carried out for all the three *Diospyros* extracts for isolation and identification of phytoconstituents. The preliminary Cytotoxic screening of the three *Diospyros* roots extract was carried out by BSL assay. Also, an *in-vitro* cytotoxicity test was carried out against Dalton’s lymphoma ascites to evaluate the antitumor effects of the three *Diospyros root extracts*.

The *in-vivo* chemopreventive effects of the *Diospyros* extracts was carried out against DMBA induced skin carcinoma in mice.

**Results:** Preliminary qualitative phytochemical investigation of the three species indicated that triterpenoids, naphthoquinones, naphthaldehydes and flavonoids were present as the major phytoconstituents.
The chemical examination of the chloroform extracts of roots of *D. oocarpa* ten compounds (ADDOR 1-ADDOR), *D. nigrescens* seven compounds (ADDNR1-ADDNR) and *D. candolleana* seven compounds (ADDCR1-ADDCR) respectively.

The Biological evaluation for cytotoxic potential revealed that all the three *Diospyros* extracts and most of their isolates possessed good cytotoxic properties. Among the extracts, *D. nigrescens* extract highest activity against brine shrimps, while *D. condolleana* extract showed highest cytotoxicity to DLA cell line. Among the isolates, were Diospyrin, 8’-hydroxyisodiospyrin and Habibone significantly inhibited the Brine shrimps, while Diospyrin, 8’-hydroxyisodiospyrin, plumbagin, Habibone and Diosindigo A were showed highly potent cytotoxicity against DLA cell lines.

The treatment of DMBA induced skin carcinoma mice with the three *Diospyros* extracts considerably decreased tumour incidence, tumour volume, tumour weight, tumour incidence and mortality rate; and increased lipid peroxide and DNA levels in plasma.

**Keywords:** *Diospyros*, oocarpa, negrisens, condolleana, naphthoquinones, flavonoids, cytotoxicity, BSL assay, DLA Cell lines, DMBA-induced skin carcinoma.