

ENG

CHEMICAL BIOLOGICAL STUDY OF *PREMNA RESINOSA* (HOCHST.) SCHAUER SURFACE EXTRACT

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Introduction

Premna resinosa (Hochst.) Schauer belongs to the Lamiaceae family. This genus includes about 200 species mainly distributed throughout tropical and subtropical Asia, Africa, Australia, and the Pacific Islands (Dianita et al., 2017; Rekha et al., 2015). Phytochemical studies performed in some *Premna* species revealed existence of diterpenoids, triterpenoids, iridoid glycosides, flavonoids, lignans and xanthenes (Dianita et al., 2017; Rekha et al., 2015). Some *Premna* species are considered as natural resources for antimicrobial, antioxidant, antipyretic, hypoglycaemic, cardiotoxic, and diuretic agents (Hymavathi et al., 2009). The essential oil obtained from *Premna* species displayed antibacterial properties (Rekha et al., 2015). *P. resinosa*, a shrub or small bushy tree, with whitish stems and coriaceous leaves with a pleasant smell, is used in Indian traditional medicine, as laxative agent and to treat bronchitis. The extracts of *P. resinosa* and their flavonoid constituents showed cytotoxic, anti-tubercular, and antimicrobial activities (Rekha et al., 2015; Albadawi et al., 2017).

Based on previous reports about *Premna* genus pharmacological activities and in continuation of our ongoing research project focused on bioactive compounds from interesting medicinal plants, *P. resinosa* was selected in this study.

In this investigation we report the isolation and characterization of labdane diterpenes of the surface extract of *P. resinosa*, and the evaluation of their antiproliferative effects.

Method

The dichloromethane extract of the surface mixture, obtained from the fresh aerial parts of *P. resinosa*, was separated by different chromatographic techniques such as Silica gel, MPLC, and HPLC. The structures of isolated compounds were elucidated by 1D and 2D NMR and MS Spectroscopy. The antiproliferative activity of the isolates was investigated on Jurkat and HeLa cell lines through MTT assay.

Results / Discussion / Conclusion

The phytochemical investigation of surface extract afforded 5 new labdane-type diterpenes and along with three methoxylated flavones and two diterpenes already described in the literature. The antiproliferative activity of the isolates was investigated on Jurkat and HeLa cell lines. The most active diterpene (**1**) at 48 h showed activity in both cell lines (IC₅₀ of 13 ± 0.7 μM and 16 ± 0.9 μM, respectively).

Our results indicate that *P. resinosa* surface extract is a source for bioactive labdane diterpenes.

Bibliographic References

- Albadawi DA, Mothana RA, Khaled JM, Ashour AE, Kumar A, Ahmad SF, Al-Said MS, Al-Rehaily AJ, Almusayeb NM. 2017. Antimicrobial, anticancer, and antioxidant compounds from *Premna resinosa* growing in Saudi Arabia. *Pharmaceutical Biology*. 55: 1759–1766.
- Dianita R, Jantan I. 2017. Ethnomedicinal uses, phytochemistry and pharmacological aspects of the genus *Premna*: a review *Pharmaceutical biology*. 55(1): 1715–1739.
- Hymavathi A, Babu KS, Naidu VGM, Rama Krishna S, Diwan PV, Madhusudana Rao J. 2009. Bioactivity-guided isolation of cytotoxic constituents from stem-bark of *Premna tomentosa*. *Bioorganic & Medicinal Chemistry Letters*. 19:5727–5731.
- Rekha K, Richa P, Suresh Babu K, Madhusudana Rao J. 2015. Phytochemistry of the Genus *Premna*: A Review. *International Journal of Pharmaceutical and Chemical Sciences*. 4(3): 317-325.