

Cytotoxic Carbazole Alkaloid from the Root of *Clausena excavata* on *Hela* Cell Line

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Keywords: *Clausena excavata*, Carbazole Alkaloid, 7-hydroxylheptaphylline, MTT assay, HeLa.

Abstract: In a search for bioactive constituents from Myanmar medicinal plants, a carbazole alkaloid, named 7-hydroxy heptaphylline (1) was isolated from the root of *Clausena excavata*. The structure of isolated compound was elucidated based on spectrophotometric data such as UV-vis, FT-IR, NMR and HRMS data. The cytotoxicity of the isolated compound (1) was evaluated by MTT assay against on HeLa cancer cells. The compound (1) exhibited moderate inhibition activity with IC₅₀ 41.4 µg/ml.

1 INTRODUCTION

Clausena excavata Burm. f. is a wild shrub, a member of Rutaceae family predominantly distributed in India, China and Southeast Asia. The leaves, twigs, and root barks of *C. excavata* have long been used in Asian folk medicine for the treatment of colic, cough, rhinitis, sore, wounds, malaria, abdominal pain, snake-bite, preliminary stage of AIDS and dermatopathy, dysentery, enteritis, and urethra infection (Waziri et al., 2016a) (Kumar et al., 2012) (Peh et al., 2013).

The constituents of *C. excavata* have been frequently studied. Phytochemical analyses in the past have revealed that *C. excavata* is a rich source of coumarins, carbazole alkaloid along with a small group of flavonoids, limonoids and triterpenoids (Cheng et al., 2009) (Mohan, 2012) (Sunthitikawinsakul et al., 2003) (Kumar et al., 2012) (Peh et al., 2013) (Peng et al., 2013) (Thant et al., 2019). Many compounds reported from *C. excavata* showed diverse therapeutic activities which are antibacterial, antifungal, antiplatelet, antiplasmodial, antitumor, antinociceptive,

antimycobacterial, and anti-HIV-1 activities (Kongkathip and Kongkathip, 2009).

The coumarins isolated from this plant have attracted attention due to its bioactive properties such as the furanone-coumarins named clauslactones A–J isolated from leaves exhibited tumor promotion inhibitory effects, nordentatin showed antibacterial properties and a pyranocoumarin clausenidin isolated from roots displayed anti-HIV-1 activity (Kumar et al., 2012). Nevertheless, the other potent bioactivities of the constituents from *C. excavata* are still unknown and worthy of exploration (Cheng et al., 2009). Moreover, four isolated pyranocoumarins from *C. excavata* and screened their cytotoxic potentials in cancer cells. The study revealed that the pyranocoumarins are good modulators of tumor cell death (Waziri et al., 2016b) (N. W. Muhd Sharif, 2011).

Cancer is the second leading cause of death worldwide. Cervical cancer is one of the most dead list diseases among women and it is occurred when the abnormal cells are undergoing to the rapid and uncontrolled growth on the cervix. Current treatments for cervical cancer may include surgery, drugs (hormonal therapy and chemotherapy),