



PHYTOCHEMICAL SCREENING BY USING TLC AND GC-MS METHODS FOR QUALITATIVE DETERMINATION OF COMPOUNDS IN *AMMI VISNAGA* L. EXTRACT

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Abstract

This study aimed to extract and purify khellin extract from *Ammi visnaga* L. grown in Iraq. Whole plant were dried, mashed, and then underwent extraction. The plant samples were subjected to n-hexane for nine hours, and then it were extract with methanol by soxhlet. The present study was included three parts, the first part was extraction method for isolation of khellin and second includes the development of a rapid analytical method for detection of khellin using GC-MS. The last part is involving separation of khellin by using thin layer chromatography TLC with different solvent systems. The overall, 23 compounds were identified in methanolic extract of *A. visnaga* were analyzed by GC-MS; and the four major compounds found to be khellin (28.391%), viznagin (25.606%), edulisin III (5.683%) and (z)-cnidimine (5.241%). Finally, we separated the compounds by TLC technique by using three different solvent systems and compared it with standard of khellin.

Key words: *Ammi visnaga* L. Phytochemical screening, GC-MS, khellin, TLC-separation

Introduction

Ammi visnaga L. it's a member of the family Apiaceae (Umbelliferae). It is an annual or biennial plant rising from a taproot erect, the maximum height of about 1.5 m. The root is like the root of the carrot with tangled leaflets (Jaradat *et al.*, 2015). The inflorescence is a compound umbel of white flowers and highly swollen at the base, later on, it becomes woody and used as toothpicks. The fruit is a compressed oval-shaped structure consisting of two mericarps and around 3 mm in length, somewhat resembling a caraway (Al-Snafi, 2013). These fruits are used for medicinal use Fig. 1. It grows in the Middle East, Europe and North Africa. Called traditionally by many names like, bisnaga, toothpick-plant, toothpick weed (since it used as tooth pick) and khella (Al-Mayah *et al.*, 2016). In Iraq *A. visnaga* grow in Sulimania, Erbil, Mosul, Kirkuk, Baghdad and Basrah (Chakravarty, 1976). *A. visnaga* used traditionally for many conditions like kidney stone, respiratory condition, mild angina, as diuretics, topically for psoriasis and vitiligo (Hashim *et al.*, 2014).

There are many pharmacological activity for khella like cardio protective, antimicrobial, antispasmodic, melanoprotective, anti-urolithiatic hypoglycaemic, and neuroprotective activities (Alam *et al.*, 2018). The vasodilation, antispasmodic and muscle relaxant effect are well established and documented in pharmacopeia (WHO, 2007). Phytochemistry studies on the *A. visnaga* shows the presence of different groups of chemical constituents. The quantities and presence of these significant metabolites depend on which parts of the plant analyzed. Furthermore, in which conditions the plants grow. The uses of different bio-regulators also effects of metabolites in *A. visnaga* (Hashim *et al.*, 2014). There are many chemical compounds in *A. visnaga*, the major is a group of γ -pyrones which are furanochromone derivatives the main are khellin and visnagin Fig. 2. These two compounds have much reported pharmacological activity like vasodilation (Alam *et al.*, 2018). Khellin have renoprotective, antibacterial and cytotoxic activity and others (WHO, 2007).

Regarding the cytotoxic activity, it has been found that khellin showed weak activity against HT-29

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