Tropical Journal of Natural Product Research

Available online at https://www.tjnpr.org

Microscopic Features and Preliminary Thin Layer Chromatography of "Thanh ngam" (*Picria fel-terrae* Lour. ex Wall) Collected in Viet Nam

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ARTICLE INFO

Article history:
Received 31 October 2017
Revised 27 November 2017
Accepted 29 November 2017
Published online 05 December 2017

ABSTRACT

Picria fel-terrae Lour. ex Wall, a plant belonging to the family Scrophulariaceae, is a medicinal plant in Vietnamese traditional medicine which has long been used to treat anorexia, snake bite wound and help gastrointestinal irritation, sweating. However, there is no much study on this medicinal plant in Viet Nam. The microscopic features of the plant were tudied. The methanol extract of the plant was developed by thin layer chromatography. The results served as database to identify the Pharmacognostic parameters of *Picria fel-terrae* Lour. ex Wall.

Keywords: *Picria fel-terrae, traditional medicine, microscopic features, methanol extract, pharmacognostic parameters*

Introduction

Picria fel-terrae Lour. ex Wall (Scrophulariaceae), commonly known as "Thanh ngam", "Mat dat", "Dia dom thao" in Viet Nam, is a medicinal plant that has long been used in Vietnamese traditional medicine to treat anorexia, snake bite wound and help gastrointestinal irritation, sweating.[1,2] In Chinese traditional medicine, *Picria fel-terrae* Lour. ex Wall is used to treat common cold cause by wind-heat, swollen sore throat, throat impediment, mumps, pain in the epigastrium and abdomen, dysentery, injuries from falls and fights, deep-rooted boil and swelling, bite wound of a viper. Some chemical constituents found in this medicinal plant include triterpenoids,[3] phenylpropanoid glycosides, *β*-sitosterol[4] and some of its biological activities include diuretic[5] and cytotoxic activities.[6] This study provides a database on microscopic features and thin layer chromatogram of *Picria fel-terrae* Lour. ex Wall to identify the pharmacognostic parameters of *Picria fel-terrae* Lour. ex Wall.

Materials and Methods

Plant material
The fresh plant of "Thanh ngam" was collected in Lao Cai, Viet Nam in October 2016. The morphologic features of the sample were described and compared to Flora of China in order to identify the scientific name.

Microscopic features
The transverse section of stem and powder characteristics of *Picria fel-terrae* Lour. ex Wall was described and illustrated.

Thin layer chromatography (TLC)
The methanol extract of *Picria fel-terrae* Lour. ex Wall was developed using some mobile phases of different solvent polarities.

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Citation: Than NV and Tung NT. Microscopic Features and Preliminary Thin Layer Chromatography of "Thanh ngam" (*Picria fel-terrae* Lour. ex Wall) Collected in Viet Nam. Trop J Nat Prod Res. 2017; 1(6):241-243. doi.org/10.26538/tjnpr/v1i6.3

Results and Discussion

Morphologic features
Herbs, that grows up to 0,5 m tall. Branches divaricate, striate. Petiole 0,5–1 cm; leaf blade ovate to sometimes suborbicular, to 2-5 × 1,5-3 cm, abaxially hispid on veins, adaxially short hispid, base cuneate, margin crenate-serrate, apex acute; lateral veins 4 or 5 on each side of midrib. Racemes 4–5- flowered. Pedicel to 1 cm. Corolla white or red brown, ca. 1.2 cm; tube ca. 6.5 mm, constricted at middle; lower lip ca. 6.5 mm; upper lip erect, ca. 4.5 mm, base wide, apically narrowly sub oblong, emarginate. Capsule ovoid, 5–6 mm (Figure 1).
The scientific name of the sample was identified as *Picria fel-terrae* Lour. Ex Wall with synonym name: *Curanga amara* Juss., belonging to family Scrophulariaceae.[7]

Microscopic features
Transverse section
Epidermis consisted of 1 layer of the cell, covered with some covering trichomes. Collenchyma of 1-2 layers occurring below the epidermis. The cortex of 5-7 layers of parenchyma cells, with sub rounded fibre bundles in ridges. Phloem of 5-10 layers of cells forming a circular band. Vessels in xylem arranged in a ring. Pith parenchymatous cells relatively large, bigger than cortex parenchymatous cells (Figure 2).

Powder characteristics
A green-brown powder[8] with a bitter taste. The diagnostic characters are fragment of epidermis with stomata, fragment of parenchyma, some containing starch granules, covering trichomes, multicellular-headed glandular trichomes and the fragment of vessels (Figure 3).

Thin layer chromatography (TLC)

The mobile solvent system: Ethylacetate-Methanol (9:1) had good separation efficiency. The chromatogram is shown in Figure 4.

The most significant feature of the transverse section of the stem of *Picria fel-terrae* Lour. ex Wall was four sub-rounded fibre bundles in ridges in parenchyma. The chromatogram of methanol extract of *Picria fel-terrae* Lour. ex Wall at 254 nm showed 9 tracks, and after derivatization showed 14 tracks.

Figure 1: *Picria felterrae*

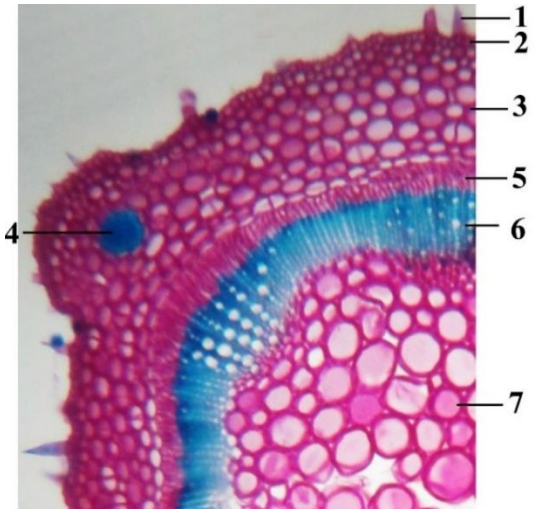

Figure 2: Transverse section of stem of *Picria fel –terra*: **1.** Covering trichome; **2.** Epidermis; **3,7.** Parenchyma, **4.** Group of fibres, **5.** Phloem, **6.** Xylem.

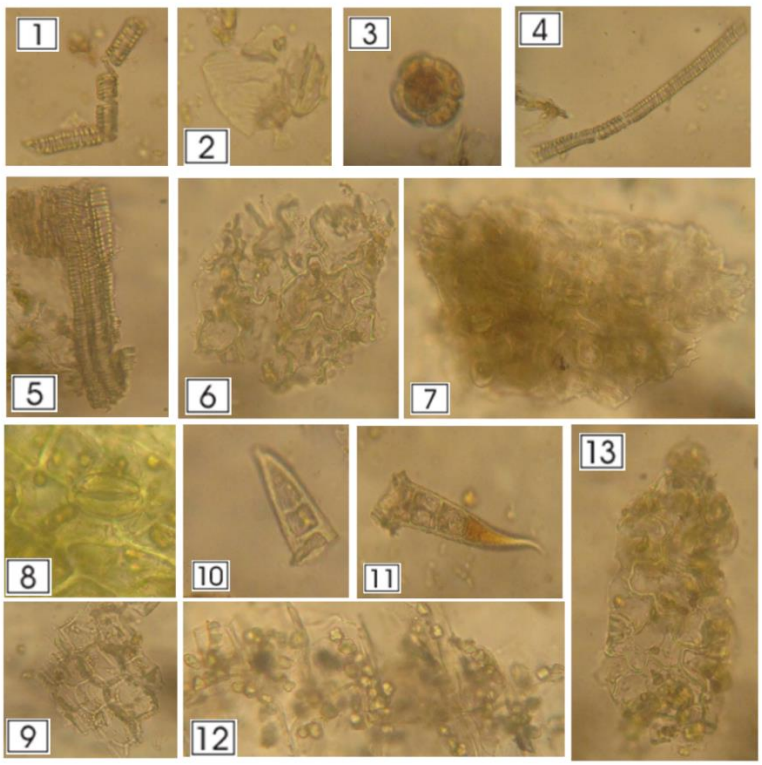

Figure 3: Powder characteristics of *Picria fel – terrae* Lour. ex Wall. **1,4.** Fragment of vessels; **2,6,7,8,13.** Fragment of epidermis with stomata; **3.** Multicellular-headed glandular trichomes; **9,12.** Fragment of parenchyma; **10,11.** Covering trichomes.

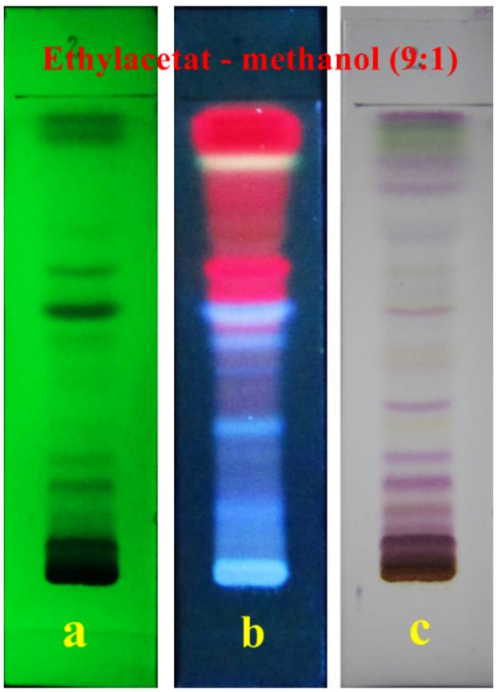

Figure 4: Thin layer chromatogram of methanol extract of *Picria fel-terrae* Lour. ex Wall developed with mobile phase: Ethylacetat – methanol (9:1) was observed at:
a. λ = 254nm
b. λ = 365nm
c. Derivatized with Vanilin/H_2SO_4 agent

Conclusion

The scientific name of sample "Thanh ngam" collected in Viet Nam was identified as *Picria fel-terrae* Lour. ex Wall, belonging to the family Scrophulariaceae. The transverse section of the stem, powder characteristics and thin layer chromatography of *Picria fel-terrae* provided important information for the pharmacognostical identification of *Picria fel-terrae* Lour. ex Wall.

Conflict of interest

The authors declare no conflict of interest.

Authors' Declaration

The authors hereby declare that the work presented in this article is original and that any liability for claims relating to the content of this article will be borne by them.

Acknowledgements

Authors wish to express their sincere gratitude to Ha Noi University of Pharmacy for partial financial support.

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