

77.1 Introduction

The following entries representing *Inula* species are listed in the Chinese Pharmacopoeia:

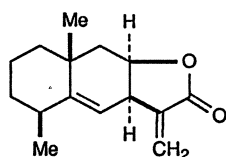
- Tumuxiang, Radix Inulae, is the dry roots of *Inula helenium* L. or *I. racemosa* Hook f. (Asteraceae) collected in the fall. It is used as a stomachic and analgesic and is recommended for the treatment of emesis, diarrhea, and prevention of miscarriage.
- Jinfocao, Herba Inulae, is the dry aboveground part of *I. linariifolia* Turcz. and *I. japonica* Thunb., collected in the summer and fall. It is used as a diuretic and mucolytic for the treatment of cough and asthma.
- Xuanfuhua, Flos Inulae, is the dry inflorescence of *I. japonica* and *I. britannica* L., collected in the summer and fall when the flowers come into bloom. It is used as a diuretic, antiemetic, and mucolytic.

In addition, the dry root of *I. cappa* DC is listed in the appendix of the Chinese Pharmacopoeia.

77.2 Chemical Constituents

77.2.1 Chemical Constituents of *Inula helenium*

Among the *Inula* species, *I. helenium* is the most investigated. A number of sesquiterpene lactones were isolated from the root of *I. helenium*. The first, designated as helenin and later as alantolactone, was isolated about 150 years ago [1]. The structure elucidation of alantolactone (77-1) was a topic of a number of studies [2–5]. Stereoselective synthesis [6] and X-ray crystallographic determination [7] of this eudesmane derivative have also been reported.



Alantolactone (Helenin, 77-1)

Other sesquiterpenes isolated from *I. helenium* were isoalantolactone (77-2) [8, 9], dihydroalantolactone (77-3), dihydroisoalantolactone (77-4) [10, 11], and tetrahy-