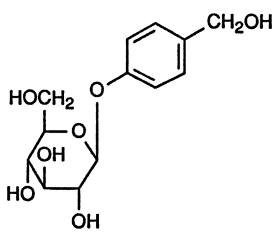
Gastrodia elata Bl. 71

71.1 Introduction

Tianma, Rhizoma Gastrodiae, is the dry tuber of *Gastrodia elata* Bl. (Orchidaceae). It has to be collected from late fall to early spring and dried at room temperature after heating in a steam bath. It is officially listed in the Chinese Pharmacopoeia and used as an anticonvulsant, analgesic, and sedative against vertigo, general paralysis, epilepsy, and tetanus.

71.2 Chemical Constituents

Gastrodin (*71-1*), a new phenolic glucoside, was isolated as the first active principle from *G. elata*. The structure was determined spectroscopically and by synthesis from acetobromoglucose and *p*-hydroxybenzaldehyde via Koenigs-Knorr glycoside synthesis followed by reduction and hydrolysis [1, 2].



Gastrodin (*71-1*)

Gastrodin was the major constituent, accompanied by its aglycone 4-hydroxybenzyl alcohol, 4-hydroxybenzaldehyde, succinic acid, citric acid and its mono methyl ester, palmitic acid, sucrose, β-sitosterol, daucosterol [3, 4]. Gastrodin content ranged from 0.16% to 1.18%, as determined in *G. elata* samples from various areas [5]. Average contents of gastrodin and *p*-hydroxybenzyl alcohol in *G. elata* were 0.41% and 0.14%, respectively [6].

The gastrodin contents in *G. elata* samples varied, depending on the collection seasons. Thus, the average content of gastrodin was 0.31% in September samples, 0.23% in December samples, and 0.93% in July samples [7]. The cultivated plant contained less gastrodin than the wild-growing plant [8].

Another new glucoside, named gastrodioside (*71-2*), was also isolated from the rhizome of *G. elata* and its structure was elucidated as bis(4-hydroxy-benzyl)ether-mono-β-D-glucopyranoside [9].