

## 59.1 Introduction

The following items from *Dioscorea* species are listed in the Chinese Pharmacopoeia:

- Shanyao, Rhizoma Dioscoreae, is the dry rhizome of *Dioscorea opposita* Thunb. (Dioscoreaceae) collected in winter and used mainly for treatment of diarrhea, asthma, polyuria, and diabetes.
- Fenbixie, Rhizoma Dioscoreae hypoglaucae, is the dry rhizome of *D. hypoglauca* Palibin collected in the fall and winter and used against rheumatic diseases.
- Mianbixie, Rhizoma Dioscoreae septemlobae, is the dry rhizome of *D. septemloba* Thunb. or *D. futschauensis* Uline collected in the fall and winter and has the same medicinal use as *D. hypoglauca*.

In addition, *D. nipponica* Makino is listed in the appendix of the Chinese Pharmacopoeia, and a number of *Dioscorea* species are used in folk medicine for different purposes. The main sapogenin diosgenin is an important starting material in the synthesis of steroid hormones.

The contents of sapogenin were determined in 16 *Dioscorea* species, *D. althaeoides*, *D. biformifolia*, *D. chingii*, *D. collettii*, *D. collettii* var. *hypoglauca*, *D. deltoidea*, *D. futschauensis*, *D. gracillima*, *D. nipponica*, *D. nipponica* subsp. *rothornii*, *D. panthaica*, *D. poilanei*, *D. septemloba*, *D. tenuipes*, *D. tokoro*, and *D. zingiberensis* native in China. The *D. zingiberensis* rhizome had the highest sapogenin content at 5.9%, whereas the tuber of *D. poilanei* had the lowest content at only 0.07% [1].

## 59.2 Chemical Constituents

### 59.2.1 Chemical Constituents of *Dioscorea hypoglauca*

Nine steroid sapogenins were isolated from the rhizome of *D. hypoglauca* and identified as  $\Delta^{3,5}$ -deoxytigogenin,  $\Delta^{3,5}$ -deoxyneotigogenin,  $\beta$ -sitosterol, diosgenin, yamogenin, diosgenin acetate, yamogenin acetate, diosgenin palmitate, and yamogenin palmitate [2]. Diosgenin (59-1), tigogenin (59-2), and yamogenin (59-3) are all derived from spirostan. Diosgenin and yamogenin as well as  $\Delta^{3,5}$ -deoxytigogenin (59-4) and  $\Delta^{3,5}$ -deoxyneotigogenin (59-5) are epimers. Whereas diosgenin and tigogenin possess a 25R configuration, yamogenin and neotigogenin show a 25S configuration.