

## 12.1 Introduction

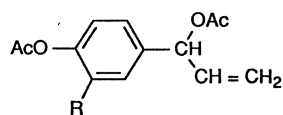
Four *Alpinia* species are listed officially in the Chinese Pharmacopoeia:

- Hongdougou, Fructus Galangae, is the dry ripe fruit of *Alpinia galanga* Willd. (Zingiberaceae) collected in fall when the fruits have turned red. It is used in the treatment of various gastric disorders, emesis, and diarrhea.
- Caodougou, Semen Alpiniae katsumadai, is the dry, nearly ripe seed of *A. katsumadai* Hayata collected in summer and fall. The Chinese Pharmacopoeia requires a quantitative determination of the content of essential oil in the seed. The content should not be less than 1% (ml/g). It is used as an antiemetic and for treatment of stomach disorders.
- Gaoliangjiang, Rhizoma Alpiniae officinarum, is the dry root stock of *A. officinarum* Hance collected in late summer and early fall. It is used for treatment of dyspepsia, gastralgia, and emesis.
- Yizhi, Fructus Alpiniae oxyphyllae, is the dry ripe fruit of *A. oxyphylla* Miq. collected in summer and fall. It is used for treatment of diarrhea, polyuria, and gastralgia. A quantitative determination of the essential oil content in the seed is required by the Chinese Pharmacopoeia and should not be less than 1% (ml/g).

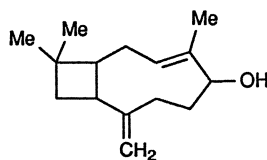
## 12.2 Chemical Constituents

### 12.2.1 Chemical Constituents of *Alpinia galanga*

A number of terpene and nonterpene components were isolated from the essential oil of the seeds of *A. galanga* and identified as 1'-acetoxychavicol acetate (12-1), 1'-acetoxyeugenol acetate (12-2), caryophyllene oxide, caryophyllenol I (12-3) and its 5-epimer caryophyllenol II, pentadecane, heptadec-7-ene, and methyl esters of some fatty acids [1].



1'-Acetoxychavicol acetate (12-1): R=H  
1'-Acetoxyeugenol acetate (12-2): R=OCH<sub>3</sub>



Caryophyllenol (12-3)