

## 88.1 Introduction

The following four items on *Morus alba* L. (Moraceae) appear in the Chinese Pharmacopoeia:

- Sangye, Folium Mori, is the dry leaves of *M. alba* collected in the fall and used as an antiphlogistic.
- Sangbaipi, Cortex Mori, is the dry root bark of *M. alba*. It could be used as an antiinflammatory and a diuretic agent.
- Sangzhi, Ramulus Mori, is the dry young branches of *M. alba* collected in the late spring and early summer. It is used for treatment of arthritis and rheumatism.
- Sangren, Fructus Mori, is the ripe aggregate fruit of *M. alba*, used as a tonic and sedative.

## 88.2 Chemical Constituents

### 88.2.1 Chemical Constituents of the Leaves of *Morus alba*

#### 88.2.1.1 Volatile Components

The essential oil from mulberry leaves could be separated into neutral (32%), acidic (26%), phenolic (28%), carbonyl (11%), and basic (4.4%) fractions [1]. Some neutral components were identified as isobutanol, isoamyl alcohol, isoamyl acetate, and acetophenone [2]. In the acidic fraction, acetic, propionic, butyric, isobutyric, isovaleric, caproic, isocaproic, and lactic acids were found [2, 3]. Phenol, *o*-, *m*-, and *p*-cresol, guaiacol, eugenol, and methyl salicylate were isolated and identified from the phenolic fraction [3] and benzaldehyde and phenylacetaldehyde were detected in the carbonyl fraction [4].

#### 88.2.1.2 Nonvolatile Components

Besides amino acids, saccharides, and vitamins, a number of compounds of different types were isolated from mulberry leaves and structurally determined. Thus, oxalic, succinic, malic, tartaric, citric, fumaric [5], and palmitic acids, and ethyl palmitate [6] were isolated from mulberry leaves. Rutin, quercetin [7], and quercetin-3-triglucoside were isolated as flavones from the mulberry leaves [8]. The sterols  $\beta$ -sitosterol, campesterol [9],  $\beta$ -sitosterolglycoside [10],  $\beta$ -ecdysone, and inokosterone [11] were also isolated from the mulberry leaves. Moreover, a polyprenoid alcohol moraprenol-11 [12] and a polypyranoid ketone bombiprenone [13] were also reported to be isolated and identified. Moraprenol-11 was structurally elucidated as