

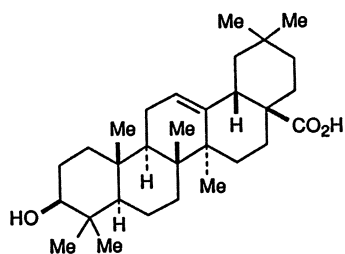
2.1 Introduction

Niuxi, Radix *Achyranthis bidentatae* is the dry root of *Achyranthes bidentata* Bl. (Amaranthaceae). The roots are dug and collected during winter when the above ground part of the plant has withered. It is officially listed in the Chinese Pharmacopoeia and used as a tonic.

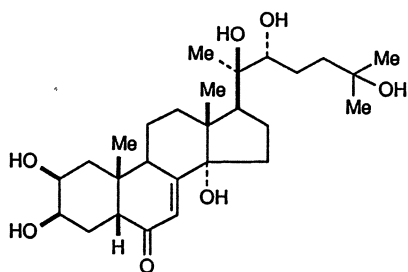
The roots of *A. aspera* L., which is unofficial, have also been used in Chinese traditional medicine and folk medicine.

2.2 Chemical Constituents

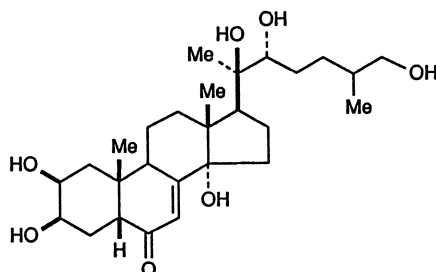
Besides oleanolic acid (2-1) from *A. bidentata* and *A. aspera* [1], some insect molting substances were also isolated from the roots of *Achyranthes* species [2]. In a study on the biologically active compounds two insect molting hormones were isolated from *A. fauriei* and were identified as ecdysterone (β -ecdysone) (2-2) [3, 4] and inokosterone (2-3) [3–6]. Ecdysterone and inokosterone were also found in the root of *A. bidentata* [7], whereas ecdysterone was again obtained from the roots of *A. aspera* [2, 7, 8].



Oleanolic acid (2-1)



Ecdysterone (β -Ecdysone) (2-2)



Inokosterone (2-3)