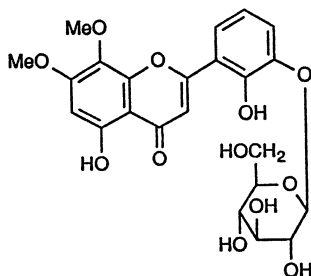
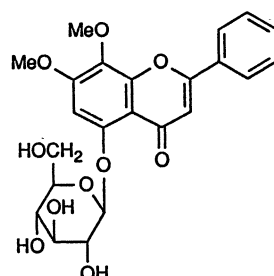


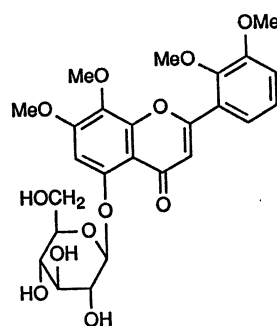
Andrographidine A (14-10)



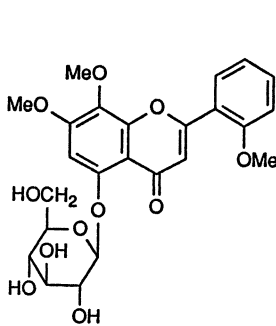
Andrographidine B (14-11)



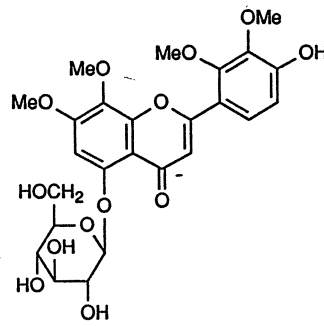
Andrographidine C (14-12)



Andrographidine D (14-13)

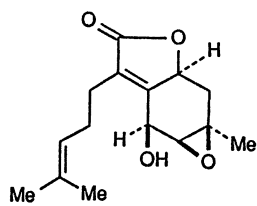


Andrographidine E (14-14)

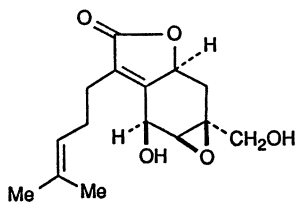


Andrographidine F (14-15)

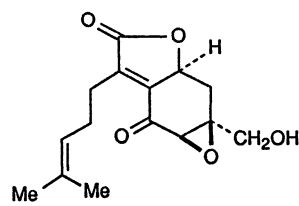
Tissue cultures derived from hypocotyl and stem of *A. paniculata* have been shown to produce sesquiterpene lactones and apparently lack the ability of the whole plant to synthesize diterpenes. Three sesquiterpene lactones based on bisabolene were isolated and structurally elucidated. They are paniculide A (14-16), B (14-17), and C (14-18). The contents of paniculide A, B, and C in culture were 3–5, 20–25, and 8–12 mg/l, respectively. Andrographolide or related substances could not be detected in tissue culture [18]. The absolute configuration of paniculide B has been determined by X-ray crystallography of its *bis-p*-bromobenzoate [19, 20].



Paniculide A (14-16)



Paniculide B (14-17)



Paniculide C (14-18)

In addition, two acidic polysaccharides, PA and PB, were recently isolated from the pectin of *A. paniculata*. The acidic polysaccharide PA contains galactose, arabinose, and rhamnose in a ratio of 5:2.8:1 and 25.6% galacturonic acid. Partial acid hydrolysis and Smith degradation of PA yields β -(1 \rightarrow 3)-D-galactan. The acidic