

# Alkaloids in Goldenseal

## HPLC Method

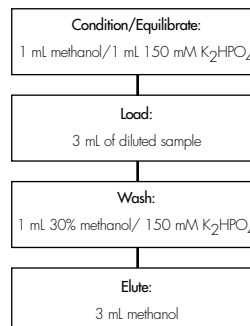
**Column:** Symmetry® C<sub>18</sub>, 4.6 x 250 mm, 5 µm  
**Part number:** WAT054275  
**Mobile Phase A:** 0.1% phosphoric acid  
**Mobile Phase B:** Acetonitrile  
**Gradient:**

Time (min)	%A	%B
0	90	10
13	78	22
40	60	40

**Flow Rate:** 1.5 mL/min  
**Injection volume:** 10 µL  
**Temperature:** 35° C  
**Detection:** UV @ 330 nm

## Oasis® HLB method for alkaloids in Goldenseal

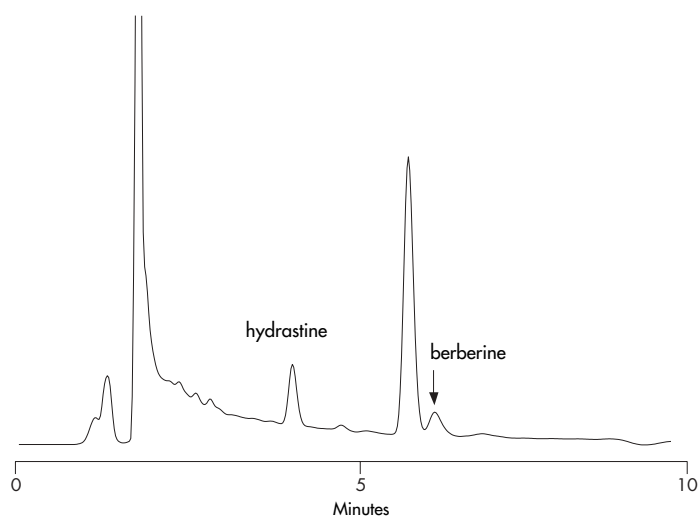
Conditions for Oasis® HLB cartridge, 3 cc, 60 mg  
 Part Number WAT094226



Herbal tea extract  
before SPE cleanup



Herbal tea extract after SPE cleanup  
using Oasis® MAX



## Sample pre-preparation

100 mg sample is extracted with 25 mL of ethanol:water (70:30)  
 1 mL of the ethanolic extract is diluted 1:3 with water (~ pH 7)

- Recovery, measured with certified standards at 100 ppm in reagent water, was greater than 85 % for all compounds
- All analyses gave results within ± 35 % of the expected values with the exception of the liquid supplement (see goldenseal analysis)
- The selective SPE extraction and cleanup procedure provided a convenient analysis of echinacea phenolics in complex matrix such as in herbal tea