



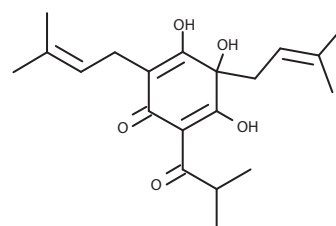
BITTER ACIDS IN HOP

INTRODUCTION

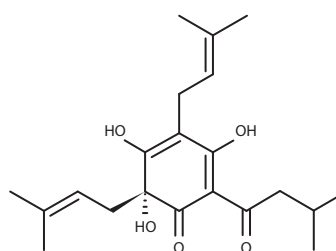
Alpha-bitter acids are precursors of iso- α -bitter acids that are formed during the brewing process. They are present in hops (*Humulus Lupulus* L.) and their content depends on plant species and growing conditions. Iso- α -bitter acids give an appreciated bitter taste to the beer.

- Substance:**
1. Co-humulone, cohumulone, CAS Number 511-25-1
 2. Humulone, CAS Number 26472-41-3
 3. Co-lupulone, CAS Number 468-27-9
 4. Lupulone, CAS Number 468-28-0

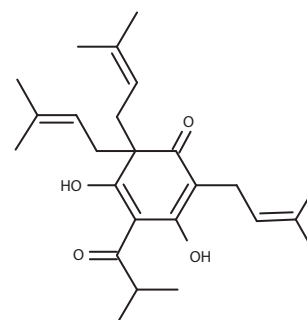
- Formula:**
1. 3,4,5-Trihydroxy-2-isobutyryl-4,6-bis(3-methyl-2-buten-1-yl)-2,5-cyclohexadien-1-one
 2. (6R)-3,5,6-Trihydroxy-2-(3-methylbutanoyl)-4,6-bis(3-methyl-2-buten-1-yl)-2,4-cyclohexadien-1-one
 3. 3,5-Dihydroxy-4-isobutyryl-2,6,6-tris(3-methyl-2-buten-1-yl)-2,4-cyclohexadien-1-one
 4. 3,5-Dihydroxy-4-(3-methylbutanoyl)-2,6,6-tris(3-methyl-2-buten-1-yl)-2,4-cyclohexadien-1-one



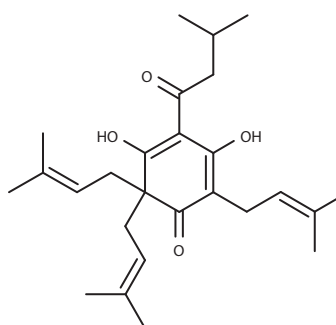
Co-humulone, cohumulone



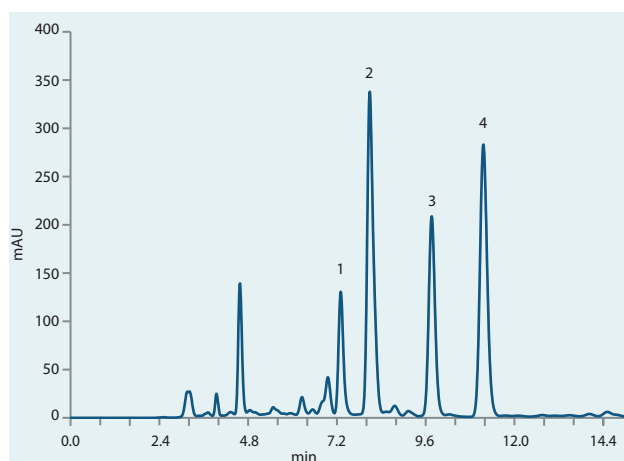
Humulone



Co-lupulone



Lupulone



Alpha- & beta- acids in hop sample

Column	ARION® Plus C18, 5.0 μ m
Dimensions	250 mm $\times$ 4.6 mm
Part number	ARI-5720-LM46
Mobile phase	Isocratic, MeOH/water/phosphoric acid (850/150/5 v/v)
Flow rate	0.8 ml/min
Temperature	40 °C
Detection	UV @314 nm
Analytes	1. Co-humulone, CAS 511-25-1 2. Humulone, CAS 26472-41-3 3. Co-lupulone, CAS 468-27-9 4. Lupulone, CAS 468-28-0