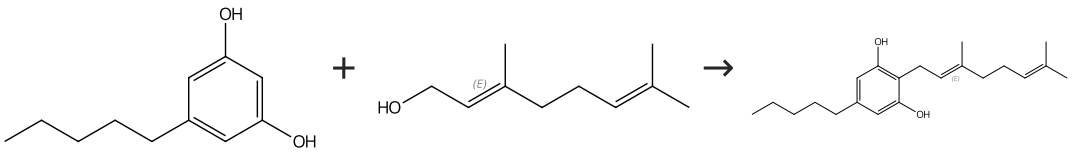
SCIFINDER[n]
A CAS SOLUTION

Reactions (17) View in SciFinder[n]

Scheme 1 (5 Reactions)



Steps: **1**

Yield: **29-40%**

Suppliers (78)

Double bond geometry shown

Suppliers (92)

Double bond geometry shown

Suppliers (24)

Reaction Summary		Steps: **1** Yield: **40%**
Reagents	*p*-Toluenesulfonic acid	
Catalysts	-	
Solvents	Chloroform	
Conditions	12 h, rt	

Biosynthesis of cannabinoid prodrugs

By: Peet, Ricard C.; et al

World Intellectual Property Organization, WO2017181118 A1 2017-10-19

PATENTPAK available

Reaction Summary		Steps: **1** Yield: **40%**
Reagents	-	
Catalysts	*p*-Toluenesulfonic acid	
Solvents	Chloroform	
Conditions	12 h, rt	

Chemoenzymatic synthesis of tetrahydrocannabivarin, carnnabivarin, and cannabinol

By: Kavarana, Malcolm J.; et al

United States, US20170283837 A1 2017-10-05

PATENTPAK available

Reaction Summary		Steps: **1** Yield: **40%**
Reagents	-	
Catalysts	*p*-Toluenesulfonic acid	
Solvents	Chloroform	
Conditions	12 h, rt	

Chemoenzymic synthesis of cannabinoids

By: Winnicki, Robert; et al

World Intellectual Property Organization, WO2014134281 A1 2014-09-04

PATENTPAK available

Reaction Summary		Steps: **1** Yield: **29%**
Reagents	Boron trifluoride etherate Alumina Sodium bicarbonate	
Catalysts	-	
Solvents	Dichloromethane Water	
Conditions	2 stages	

Boron trifluoride etherate on alumina - a modified Lewis acid reagent(V) a convenient single-step synthesis of cannabinoids

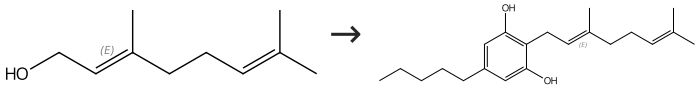
By: Baek, Seung-Hwa; et al

Bulletin of the Korean Chemical Society (1995), 16(3), 293-6.

Reaction Summary		Steps: **1**	Structure and synthesis of cannabigerol, a new hashish constituent By: Gaoni, Y.; et al Proceedings of the Chemical Society, London (1964), (Mar.), 82.
Reagents	-		
Catalysts	-		
Solvents	Decalin		
Conditions	-		

Scheme 2 (1 Reaction)

Steps: **1**



Double bond geometry shown

Suppliers (92)

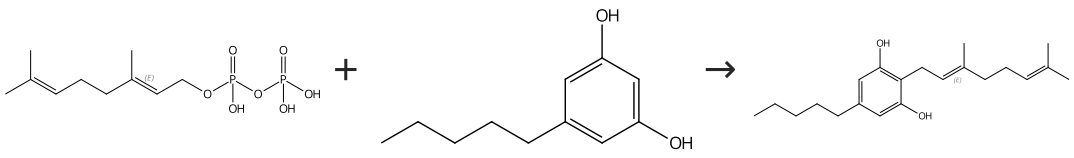
Double bond geometry shown

Suppliers (24)

Reaction Summary		Steps: **1**	Boron trifluoride etherate on alumina - a modified Lewis acid reagent. An improved synthesis of cannabidiol By: Baek, Seung Hwa; et al Tetrahedron Letters (1985), 26(8), 1083-6.
Reagents	-		
Catalysts	Boron trifluoride etherate Silica		
Solvents	Dichloromethane		
Conditions	-		

Scheme 3 (1 Reaction)

Steps: **1**



Double bond geometry shown

Suppliers (7)

Suppliers (78)

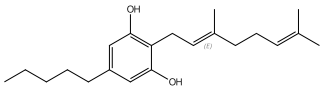
Double bond geometry shown

Suppliers (24)

Reaction Summary		Steps: **1**	Chemoenzymatic syntheses of prenylated aromatic small molecules using Streptomyces prenyltransferases with relaxed substrate specificities By: Kumano, Takuto; et al Bioorganic & Medicinal Chemistry (2008), 16(17), 8117-8126.
Reagents	Tris(hydroxymethyl)aminomethane Magnesium chloride		
Catalysts	-		
Solvents	-		
Conditions	pH 9, 25 °C		
Experimental Protocols			

Scheme 4 (4 Reactions)

Product Only Reaction
See full text



Double bond geometry shown

Suppliers (24)

Reaction Summary		
Reagents	-	Synthesis and antitumor activity of cannab igerol By: Baek, Seung-Hwa; et al Archives of Pharmacal Research (1996), 19(3), 228-230.
Catalysts	-	
Solvents	-	
Conditions	-	

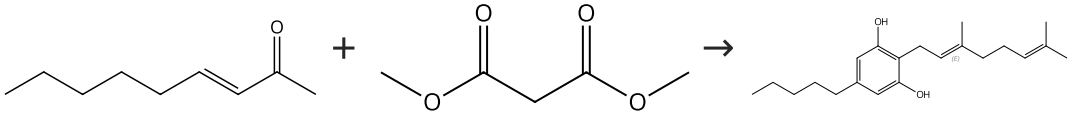
Reaction Summary		
Reagents	-	Isolation and structure of Δ+- tetrahydro cannabinol and other neutral cannabinoids from hashish By: Gaoni, Yechiel; et al Journal of the American Chemical Society (1971), 93(1), 217-24.
Catalysts	-	
Solvents	-	
Conditions	-	

Reaction Summary		
Reagents	-	Stereoselective cyclizations of cannabinoid 1,5-dienes By: Mechoulam, Raphael; et al Tetrahedron Letters (1969), (60), 5349-52.
Catalysts	-	
Solvents	-	
Conditions	-	

Reaction Summary		
Reagents	-	Methods for the manufacture of cannabinoid prodrugs, pharmaceutical formulations and their use By: Peet, Richard C.; et al World Intellectual Property Organization, WO2017216362 A1 2017-12-21 PATENTPAK available
Catalysts	-	
Solvents	-	
Conditions	-	

Scheme 5 (3 Reactions)

Steps: **3**



Suppliers (29)

Suppliers (81)

Double bond geometry shown

Suppliers (24)

Reaction Summary		
Reagents	Sodium methoxide Bromine	Steps: **3**
Catalysts	*p*-Toluenesulfonic acid	
Solvents	Methanol Water Dimethylformamide View all on Reaction Detail	
Conditions	Multiple Steps - View Reaction Detail	

Chemoenzymatic synthesis of tetrahydrocannabivarin, carnnabivarin, and cannabinol

By: Kavarana, Malcolm J.; et al

United States, US20170283837 A1 2017-10-05

PATENTPAK available

Reaction Summary		
Reagents	Sodium methoxide Water Bromine View all on Reaction Detail	Steps: **3**
Catalysts	-	
Solvents	Methanol Dimethylformamide Chloroform	
Conditions	Multiple Steps - View Reaction Detail	

Biosynthesis of cannabinoid prodrugs

By: Peet, Ricard C.; et al

World Intellectual Property Organization, WO2017181118 A1 2017-10-19

PATENTPAK available

Reaction Summary		
Reagents	Sodium methoxide Hydrochloric acid Bromine	Steps: **3**
Catalysts	*p*-Toluenesulfonic acid	
Solvents	Methanol Water Dimethylformamide View all on Reaction Detail	
Conditions	Multiple Steps - View Reaction Detail	

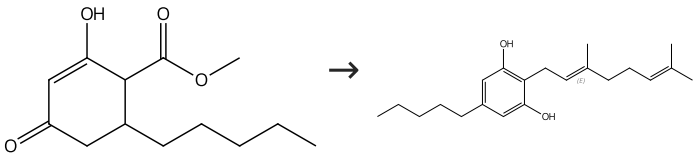
Chemoenzymic synthesis of cannabinoids

By: Winnicki, Robert; et al

World Intellectual Property Organization, WO2014134281 A1 2014-09-04

PATENTPAK available

Scheme 6 (3 Reactions)



Steps: **2**

Suppliers (9)

Double bond geometry shown

Suppliers (24)

Reaction Summary			
Reagents	Bromine	Steps: **2**	Chemoenzymic synthesis of cannabinoids By: Winnicki, Robert; et al World Intellectual Property Organization, WO2014134281 A1 2014-09-04 **PATENTPAK** available
Catalysts	*p*-Toluenesulfonic acid		
Solvents	Dimethylformamide Chloroform		
Conditions	Multiple Steps - View Reaction Detail		

Reaction Summary			
Reagents	Bromine	Steps: **2**	Chemoenzymatic synthesis of tetrahydrocannabivarin, carnnabivarin, and cannabinol By: Kavarana, Malcolm J.; et al United States, US20170283837 A1 2017-10-05 **PATENTPAK** available
Catalysts	*p*-Toluenesulfonic acid		
Solvents	Dimethylformamide Chloroform		
Conditions	Multiple Steps - View Reaction Detail		

Reaction Summary			
Reagents	Bromine *p*-Toluenesulfonic acid	Steps: **2**	Biosynthesis of cannabinoid prodrugs By: Peet, Ricard C.; et al World Intellectual Property Organization, WO2017181118 A1 2017-10-19 **PATENTPAK** available
Catalysts	-		
Solvents	Dimethylformamide Chloroform		
Conditions	Multiple Steps - View Reaction Detail		

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