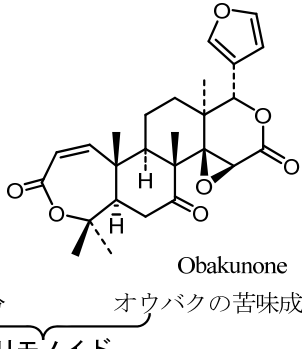
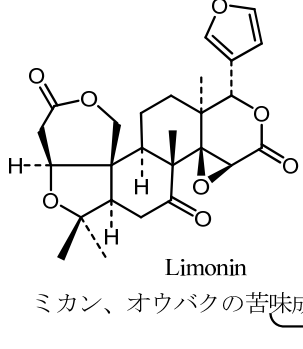
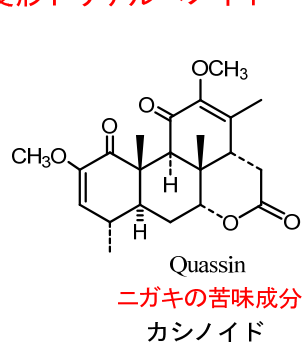
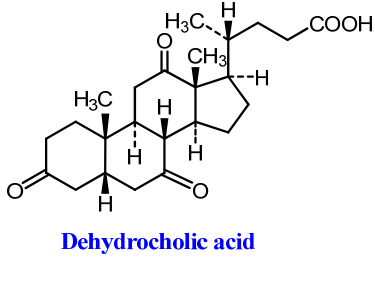
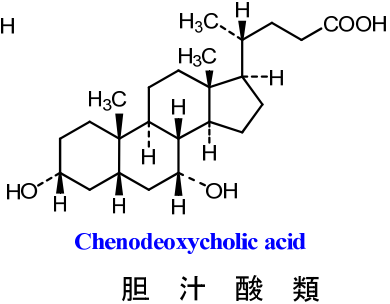
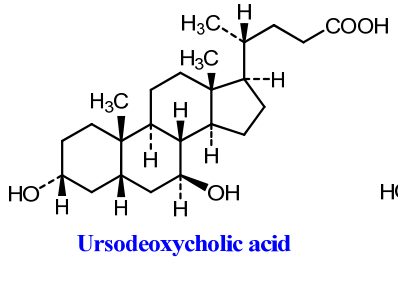


★変形トリテルペノイド

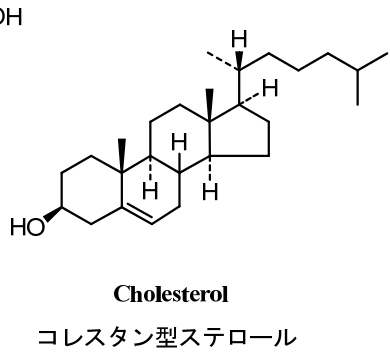
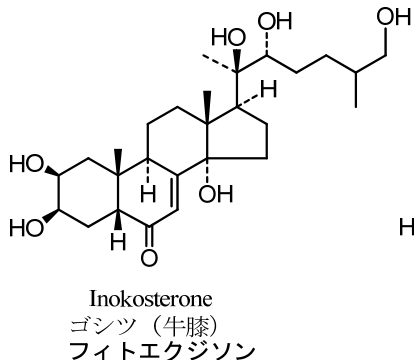
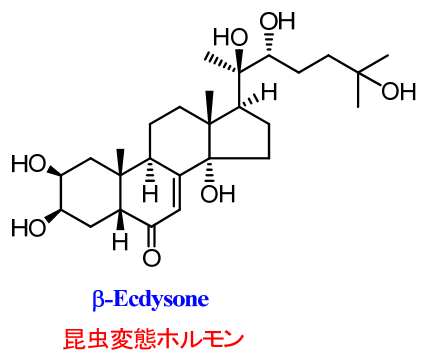


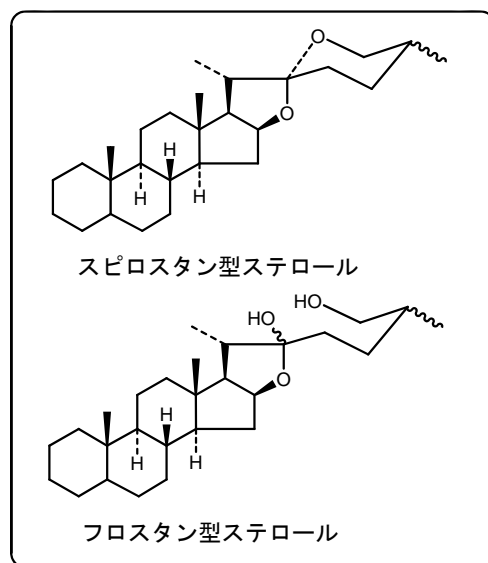
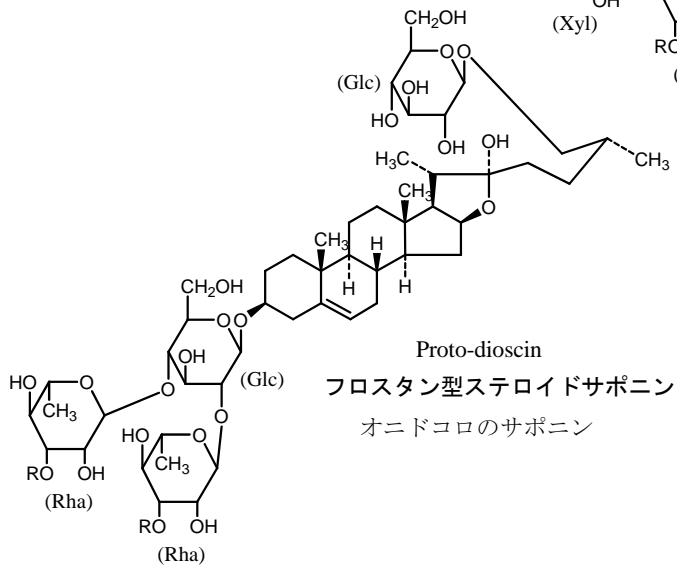
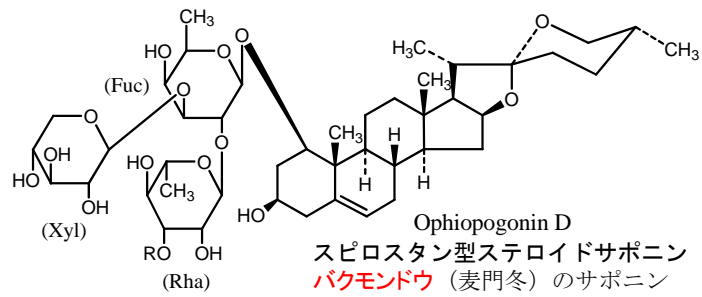
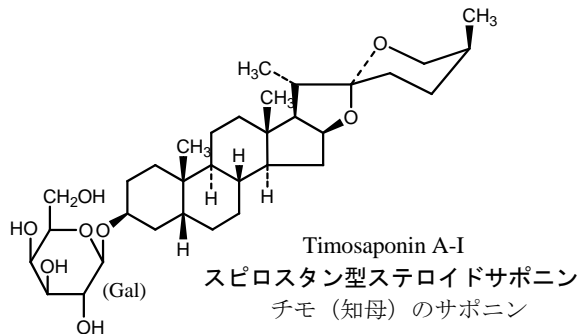
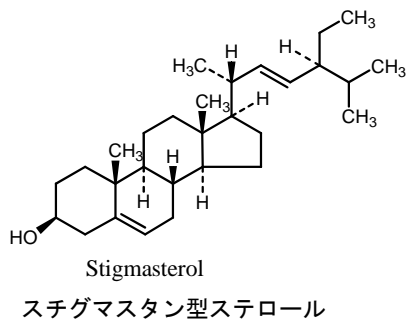
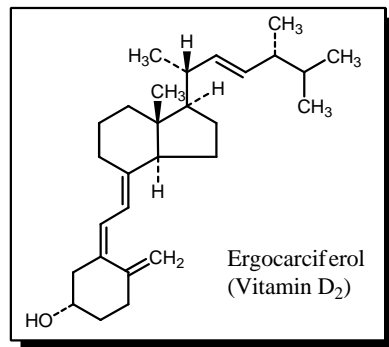
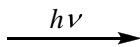
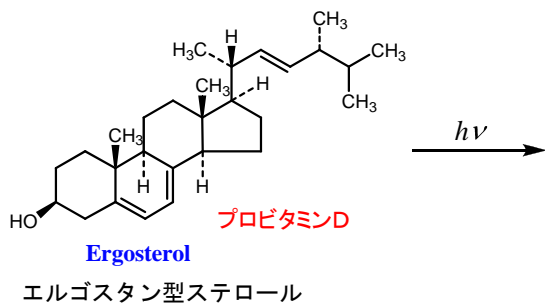
リモノイド

★ステロール（ステロイド）

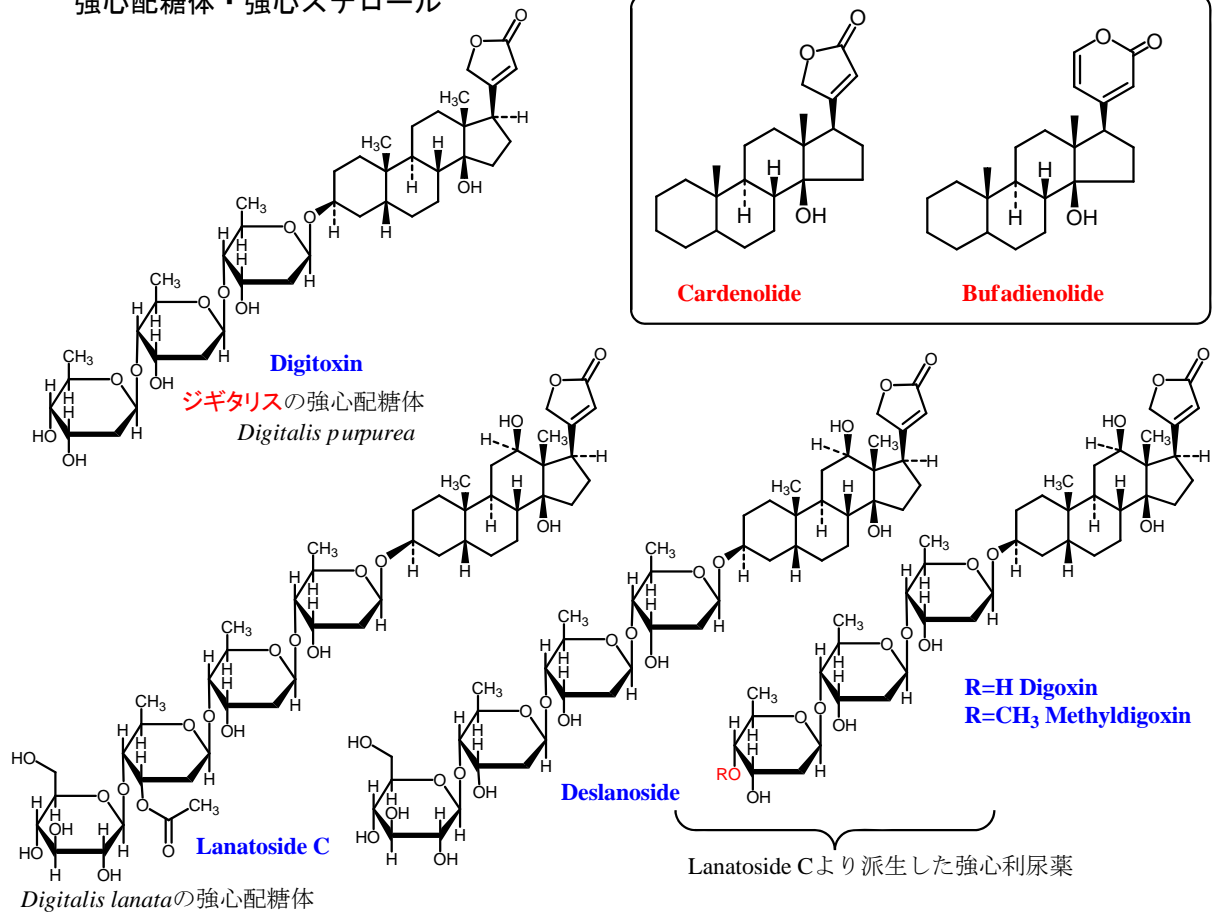


胆汁酸類

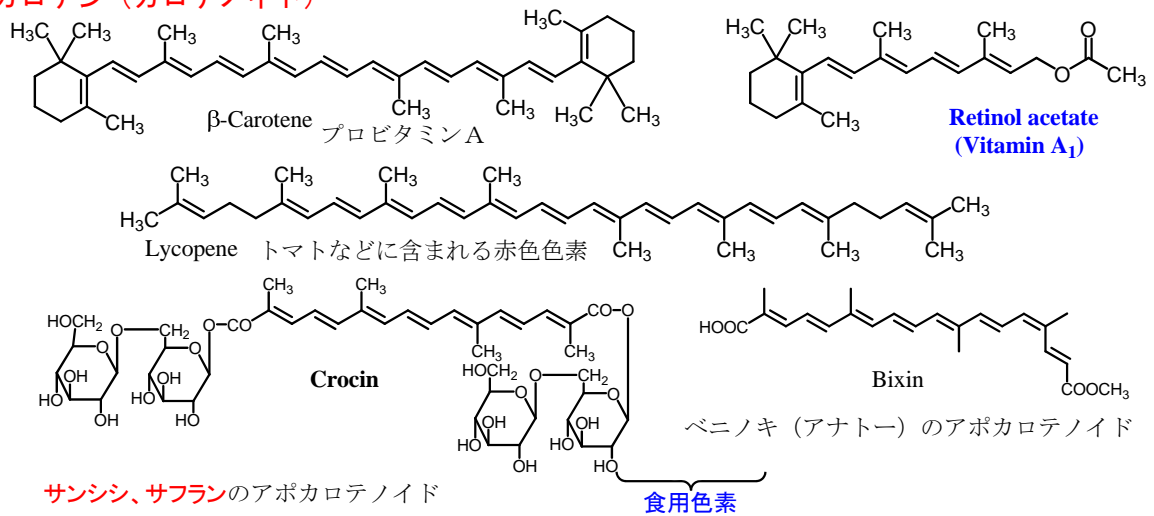




強心配糖体・強心ステロール



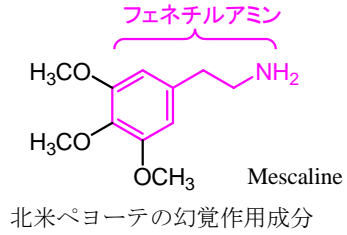
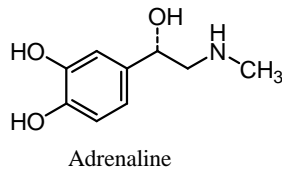
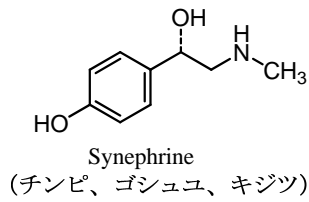
★カロテン（カロテノイド）



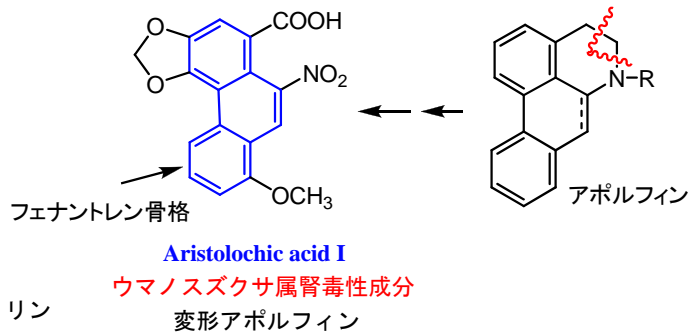
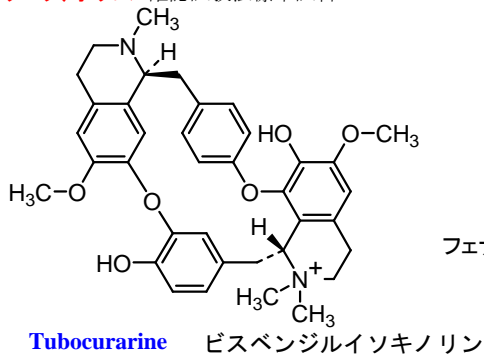
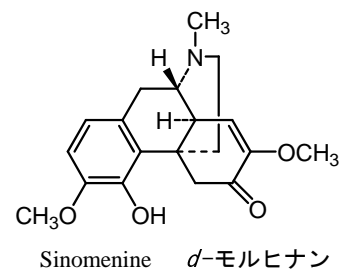
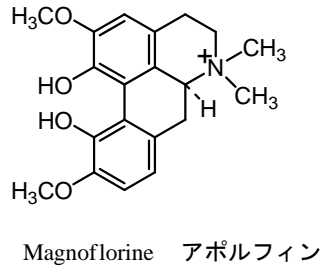
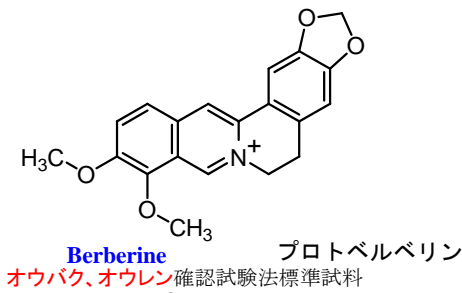
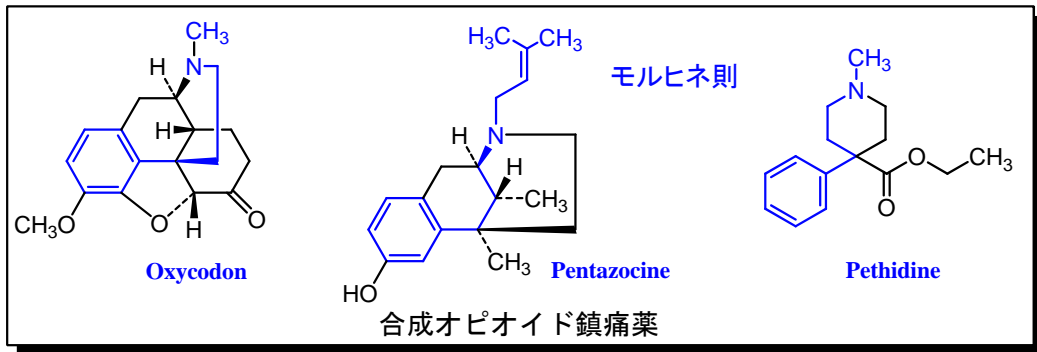
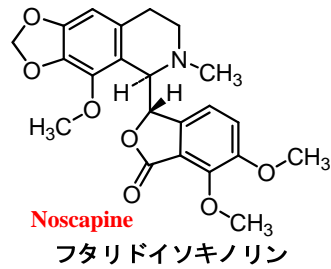
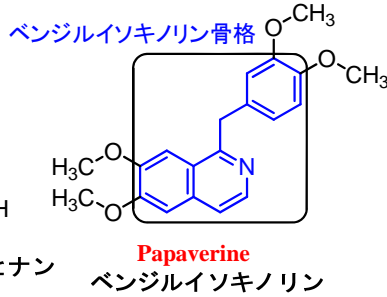
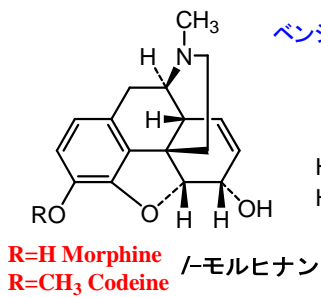
■含窒素天然有機化合物

1. 真正アルカロイド (アミノ酸経路由来)

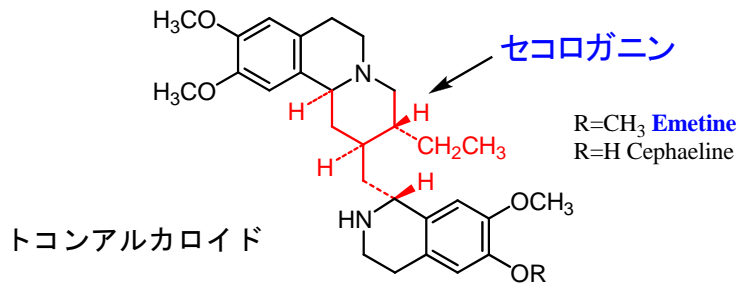
★フェネチルアミン (チロシン由来)



★ベンジルイソキノリンアルカロイド (チロシン由来)  
ケシアルカロイド

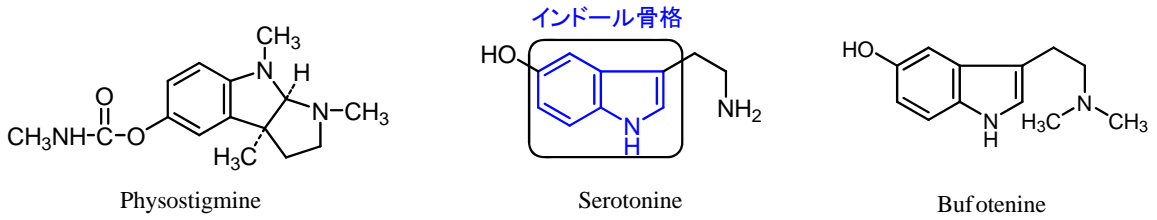


★モノテルペンイソキノリンアルカロイド  
(チロシン由来)

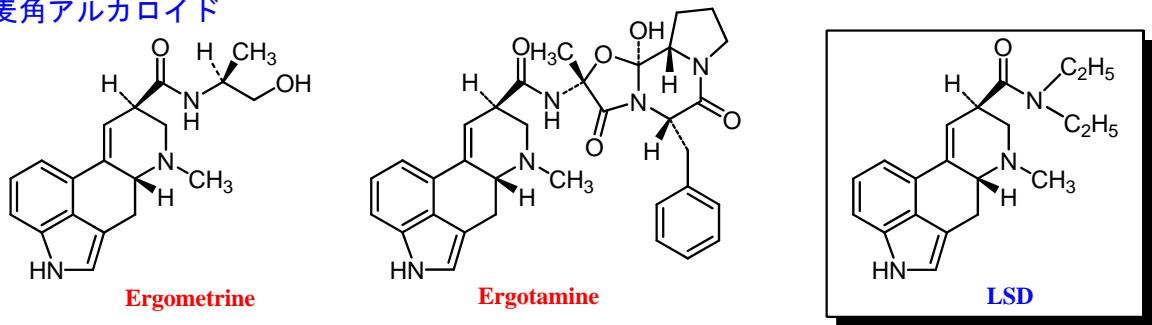


★インドールアルカロイド (トリプトファン由来)

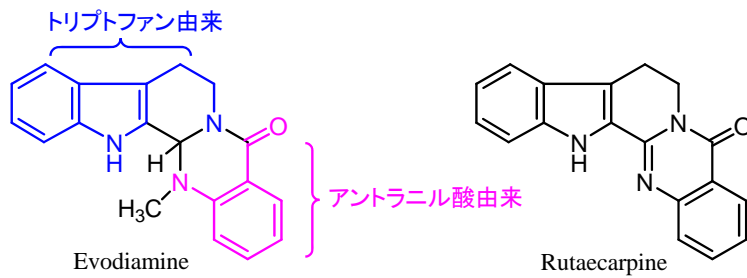
単純インドールアルカロイド



麦角アルカロイド

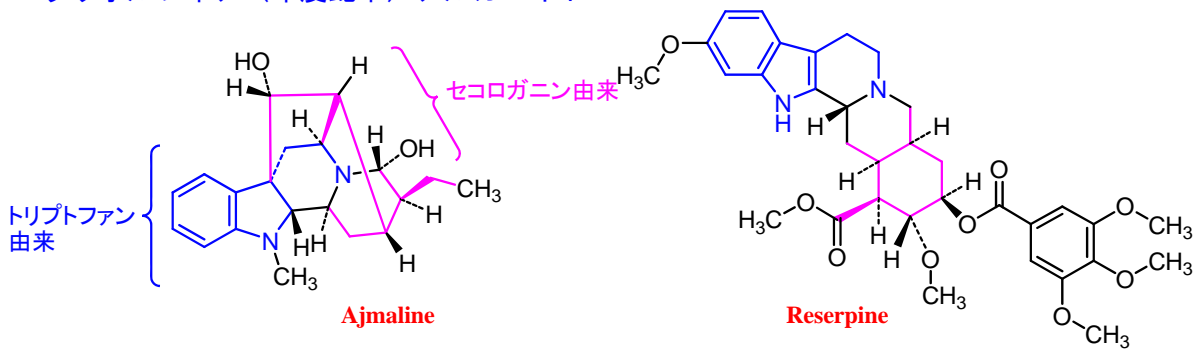


ゴシユアルカロイド

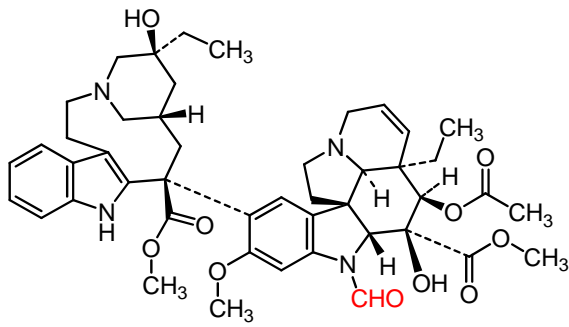


★モノテルペンインドールアルカロイド (トリプトファン由来)

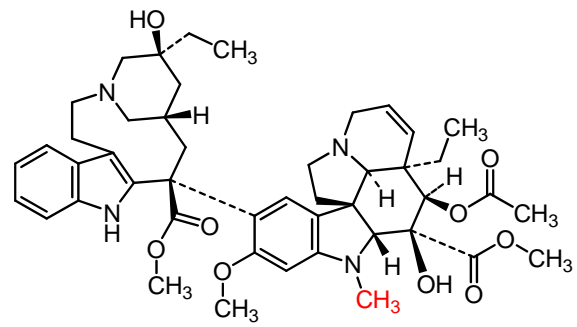
ラウオルフィア (印度蛇木) アルカロイド



ニチニチソウアルカロイド (ビンカアルカロイド)

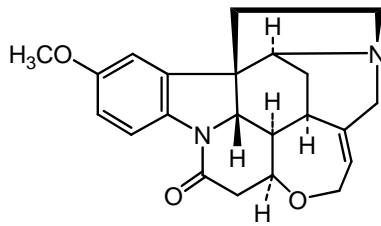


Vincristine



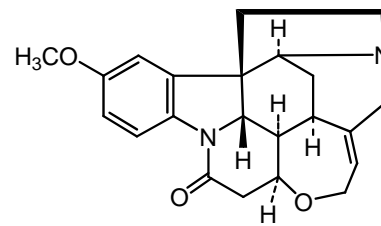
Vinblastine

マチンアルカロイド (ストリクノスアルカロイド)



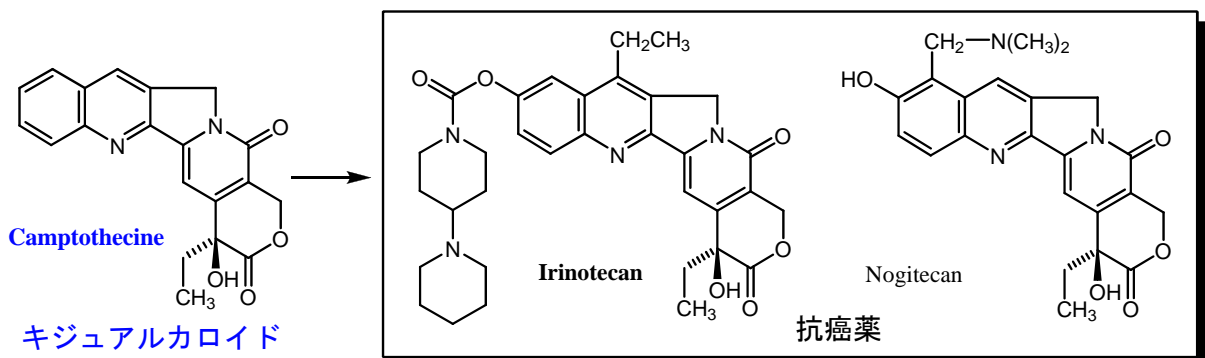
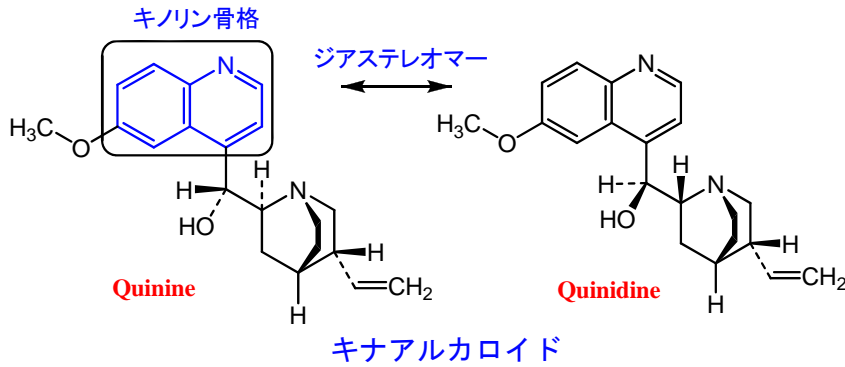
Strychnine

ホミカの苦味成分



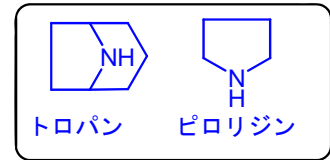
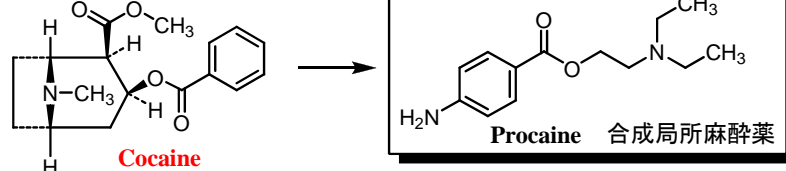
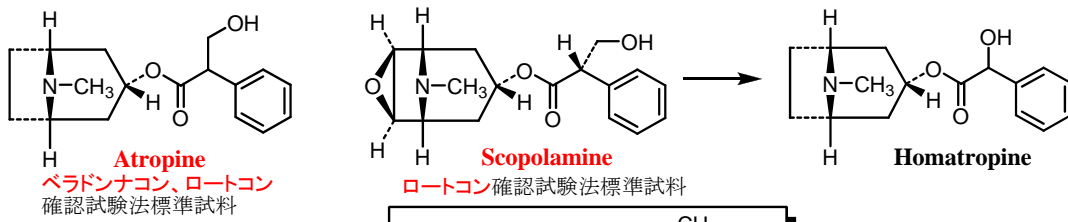
Brucine

★変形モノテルペンインドールアルカロイド (トリプトファン由来)



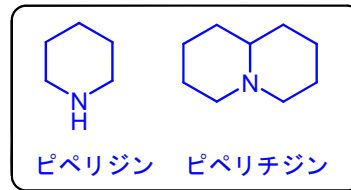
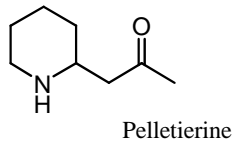
★オルニチン由来のアルカロイド

トロパンアルカロイド

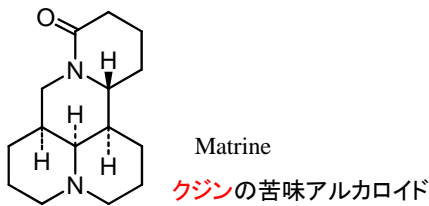


★リジン (Lysine) 由来のアルカロイド

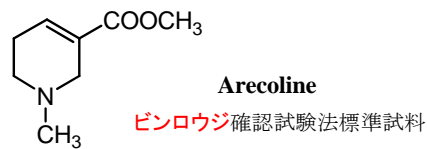
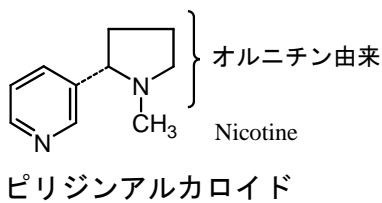
ザクロヒアルカロイド (ピペリジナルカロイド)



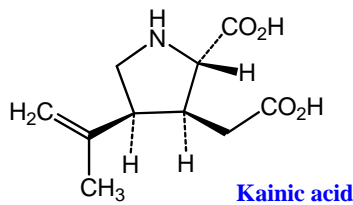
ピペリチジナルカロイド



★ニコチン酸由来のアルカロイド



★グルタミン酸由来のアルカロイド

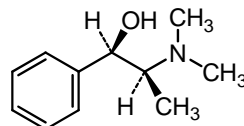
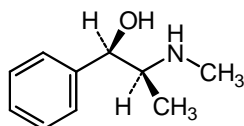


★アントラニル酸由来のアルカロイド

→ゴシユアルカロイド参照 (p. 12)

2. プソイドアルカロイド (非アミノ酸経路由来の二次代謝物 + NH<sub>3</sub>)

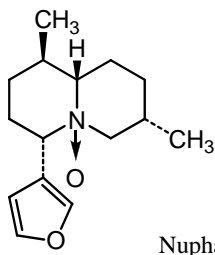
★マオウアルカロイド (シキミ酸経路 + ピルビン酸 + NH<sub>3</sub>)



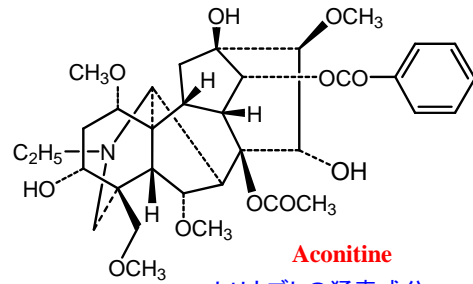
★イソプレノイドアルカロイド (イソプレノイド経路+NH<sub>3</sub>)

セスキテルペノイドアルカロイド

ジテルペノイド (アコナン系) アルカロイド

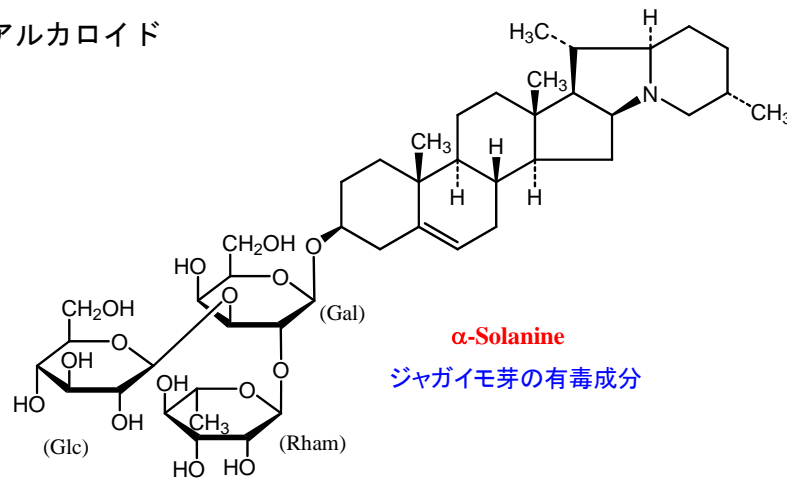


Nupharidine  
センコツのアルカロイド



Aconitine  
トリカブトの猛毒成分

ステロイドアルカロイド

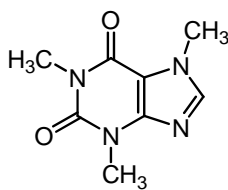


$\alpha$ -Solanine  
ジャガイモ芽の有毒成分

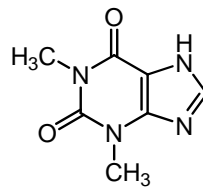
3. その他含窒素化合物 (非アルカロイド成分)

★プリン誘導体 (非アミノ酸由来)

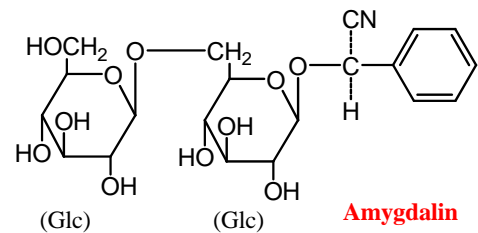
★青酸配糖体 (アミノ酸経路由来)



Caffeine  
(茶葉、コーヒー豆)

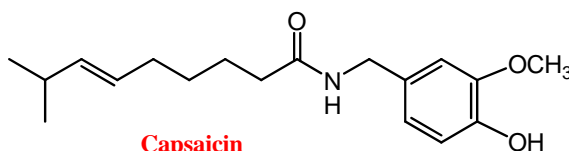


Theophylline

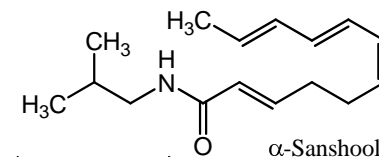


Amygdalin  
トウニン、キョウニン確認試験法標準試料

★辛味アミド誘導体 (アミノ酸経路+酢酸-マロン酸経路)



Capsaicin  
トウガラシ確認試験法標準試料



(サンショウ)

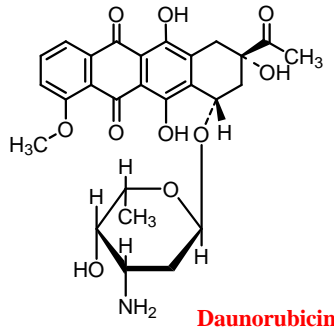
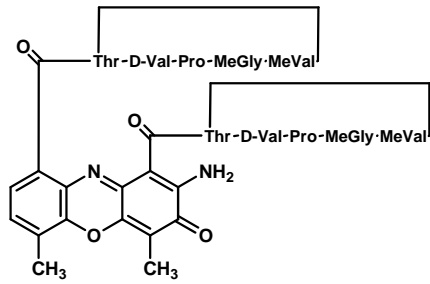
$\alpha$ -Sanshool



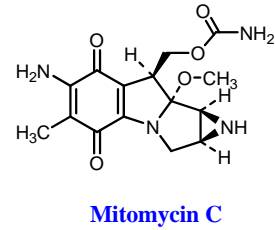
■ 特異活性の天然有機化合物

1. 抗腫瘍抗生物質

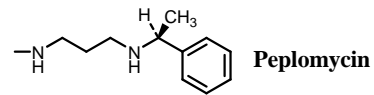
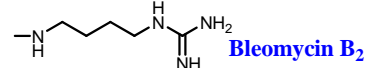
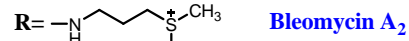
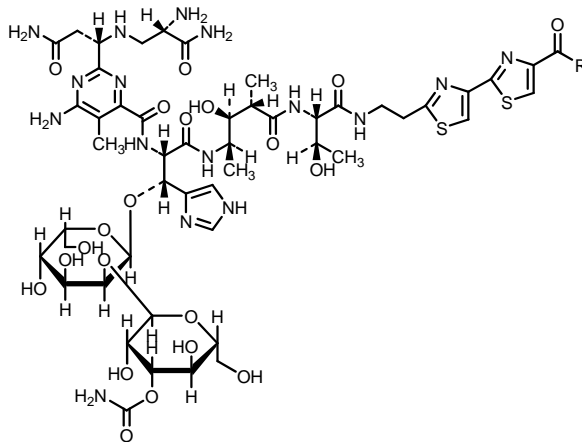
★ DNAインターカレーター



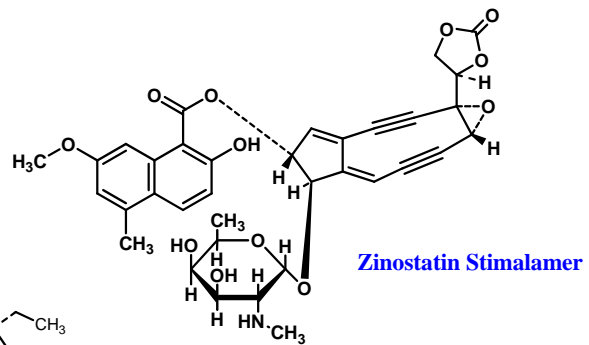
★ DNA架橋薬



★ 活性酸素を生成してDNA鎖を切断する抗腫瘍抗生物質

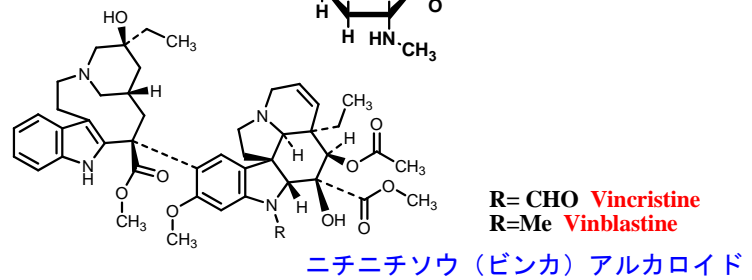
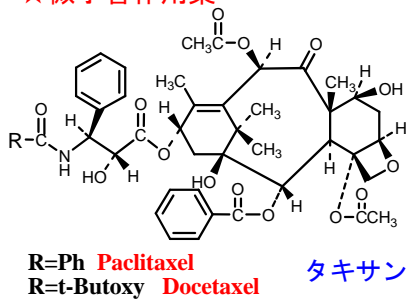


★ ラジカルを生成してDNA鎖を切断する抗腫瘍抗生物質→



2. 高等植物起源の抗悪性腫瘍薬

★ 微小管作用薬



★ トポイソメラーゼ阻害薬

