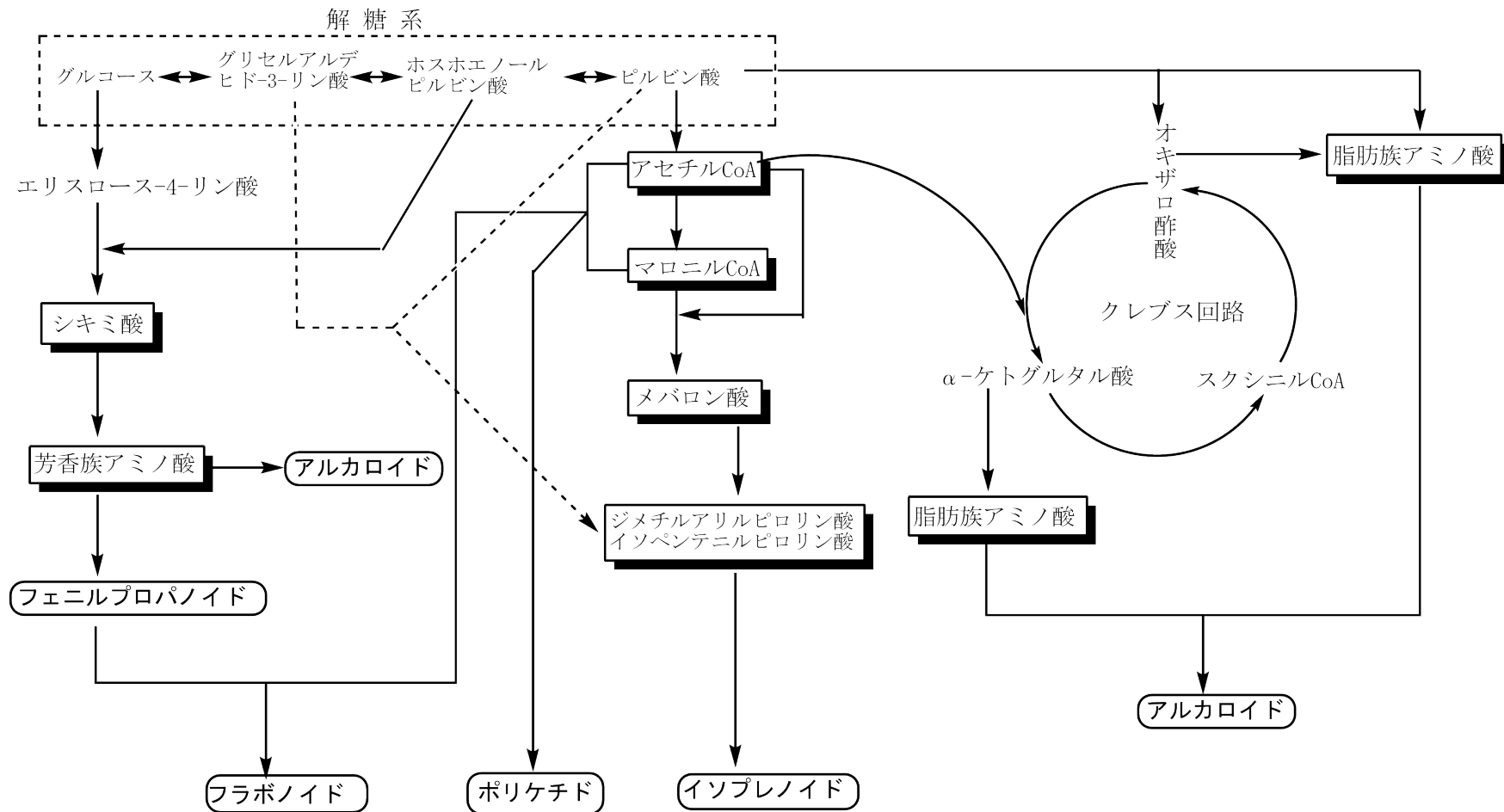
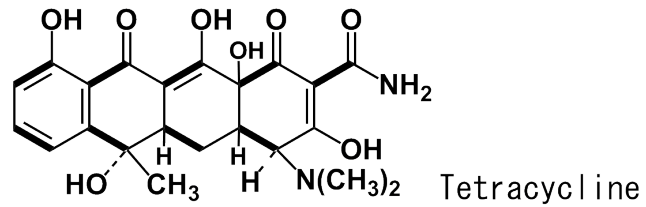
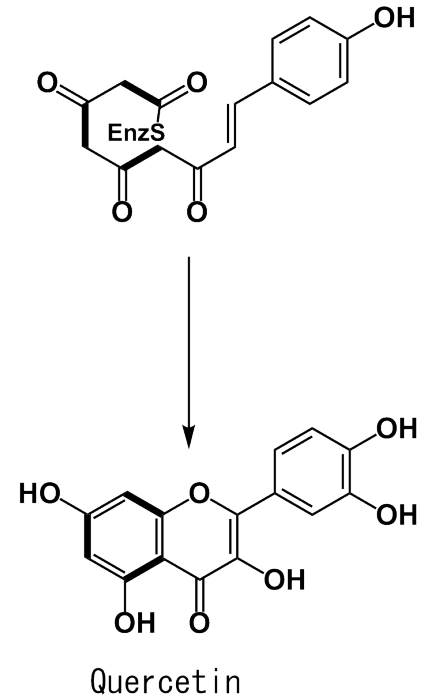
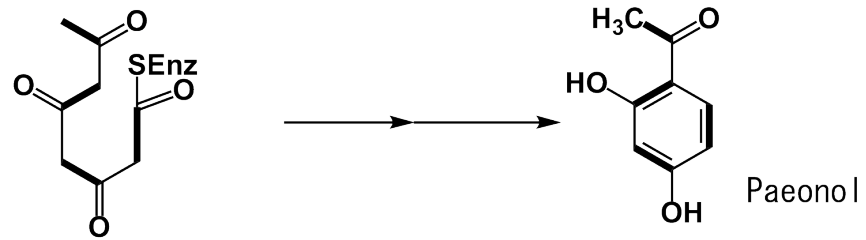
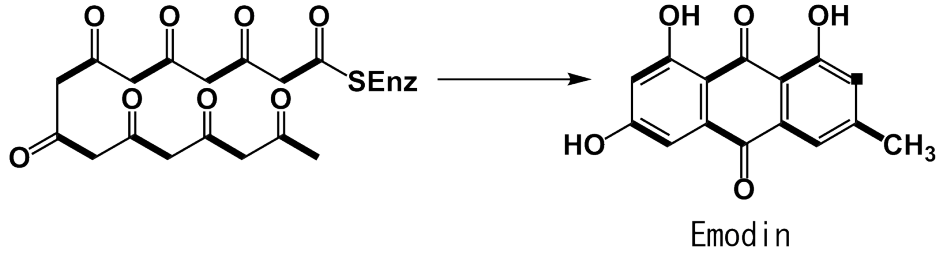


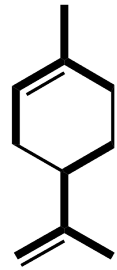
一次代謝物と二次代謝物の生合成相関



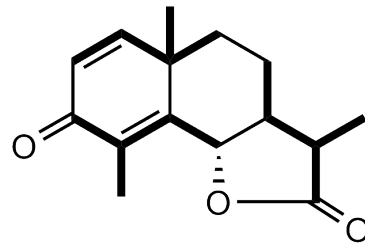
ポリケチド則



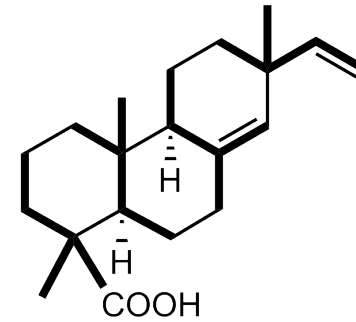
イソプレン則



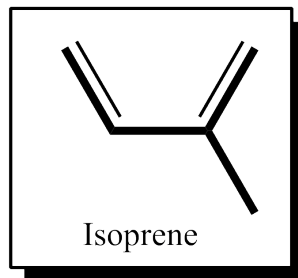
Limonene
カンキツの精油成分



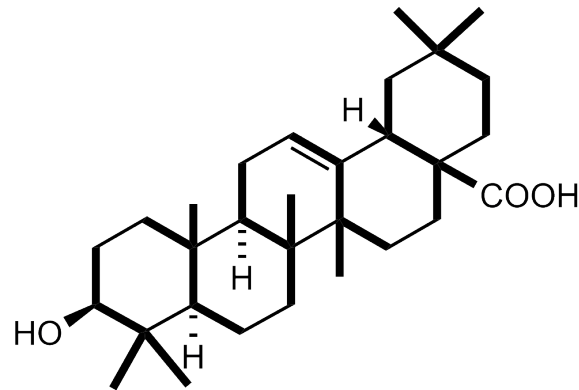
(-)-α-Santonin
駆虫薬



Pimaric acid
松脂の精油成分

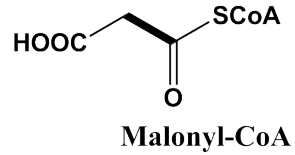
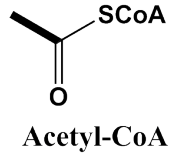


Isoprene

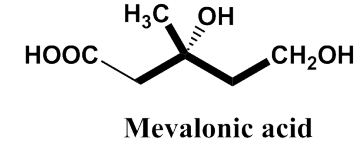
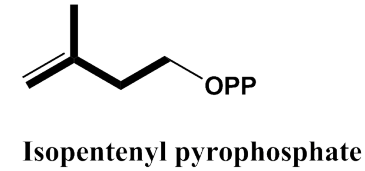
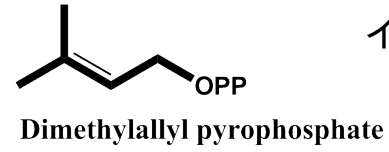


Oleanolic acid
様々な植物に広く含まれる
トリテルペン

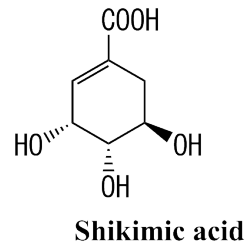
ポリケチド



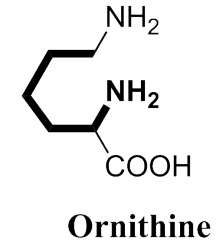
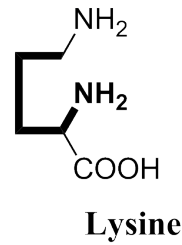
イソプレノイド



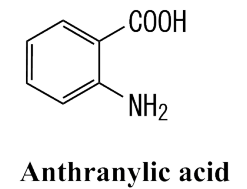
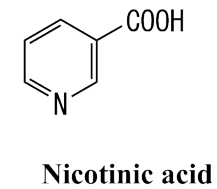
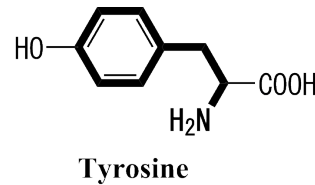
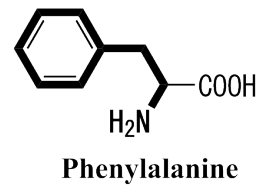
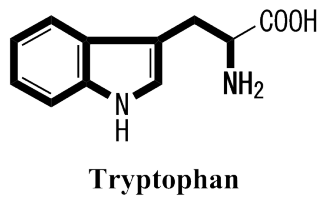
フェニルプロパノイド

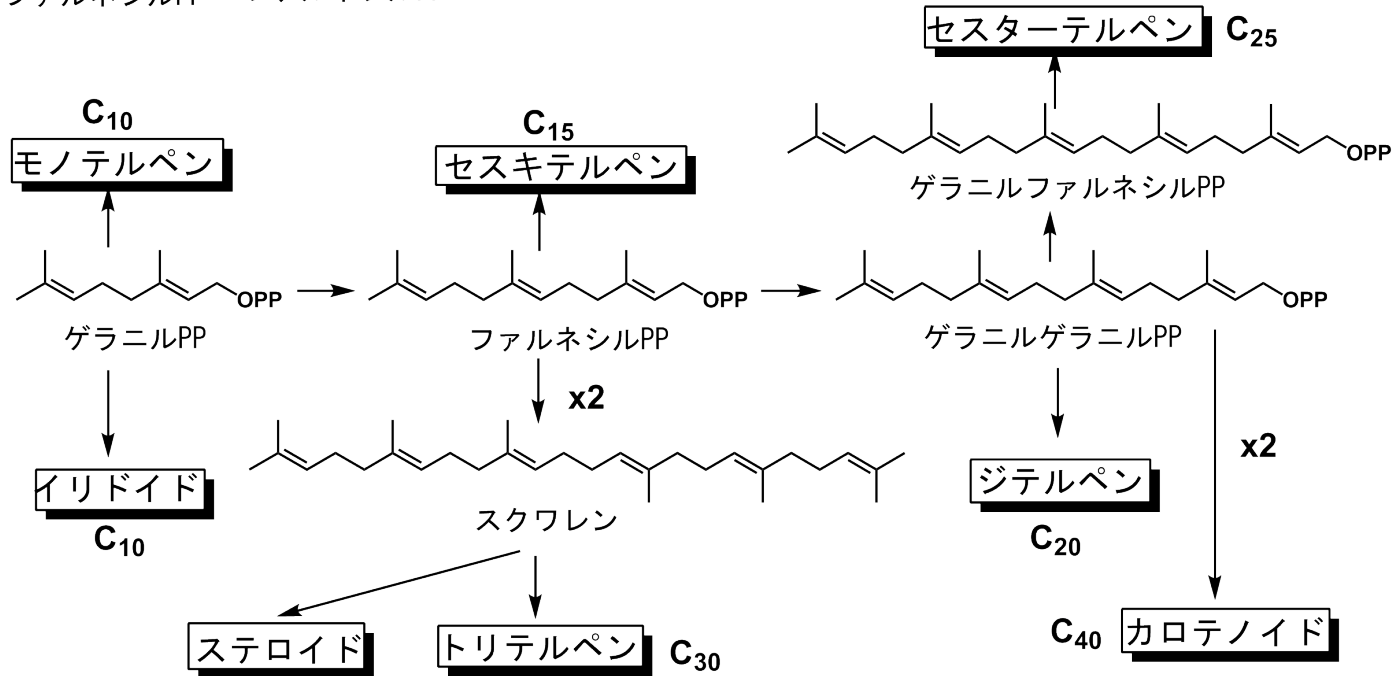
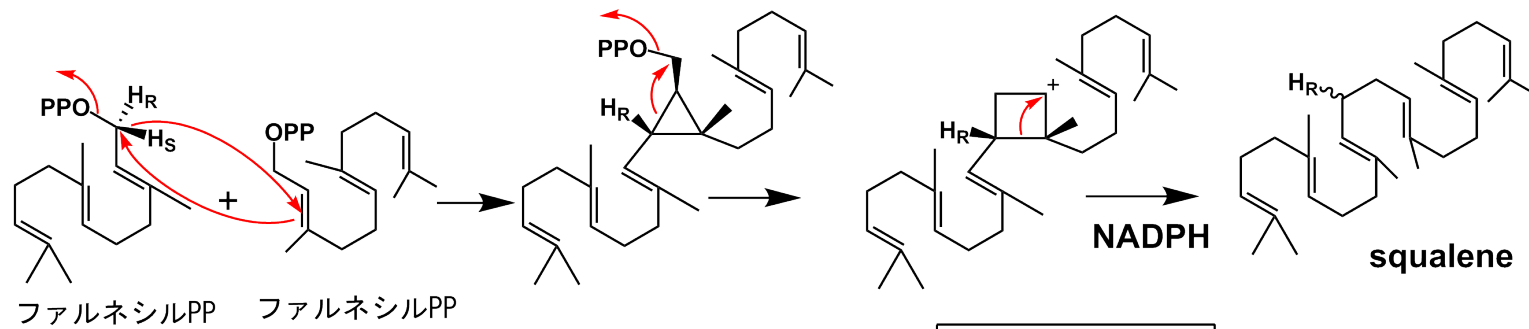


アルカロイド (非芳香族)

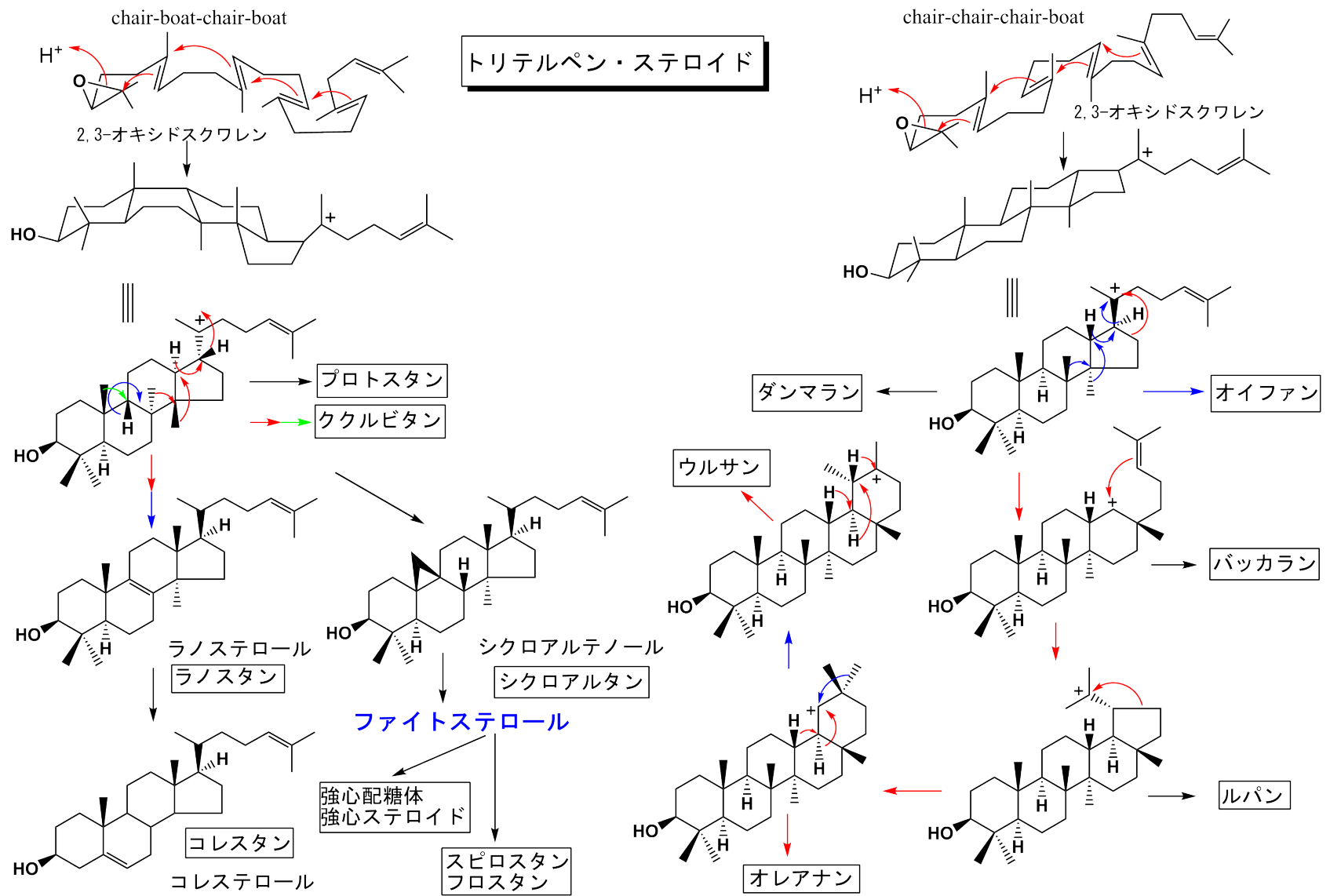


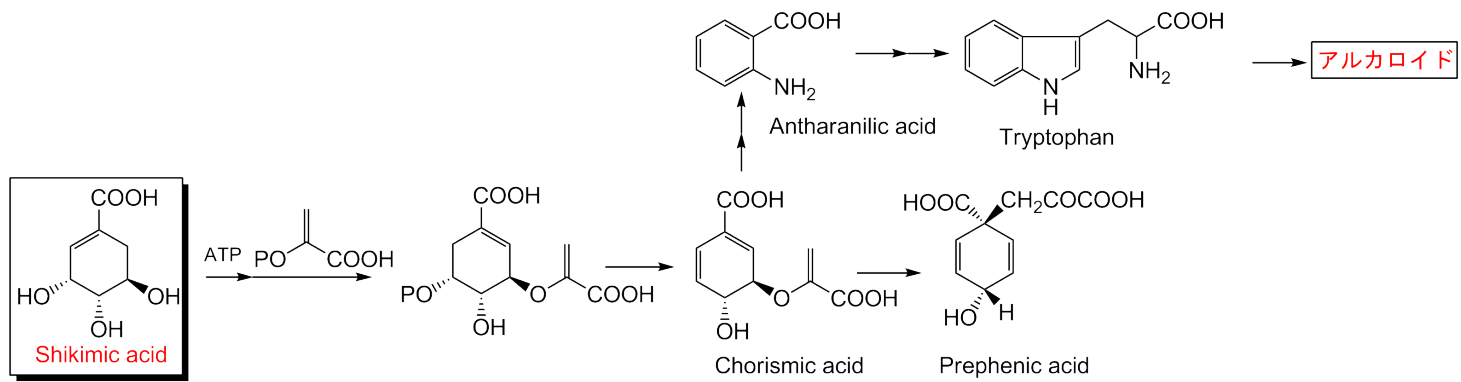
アルカロイド (芳香族)



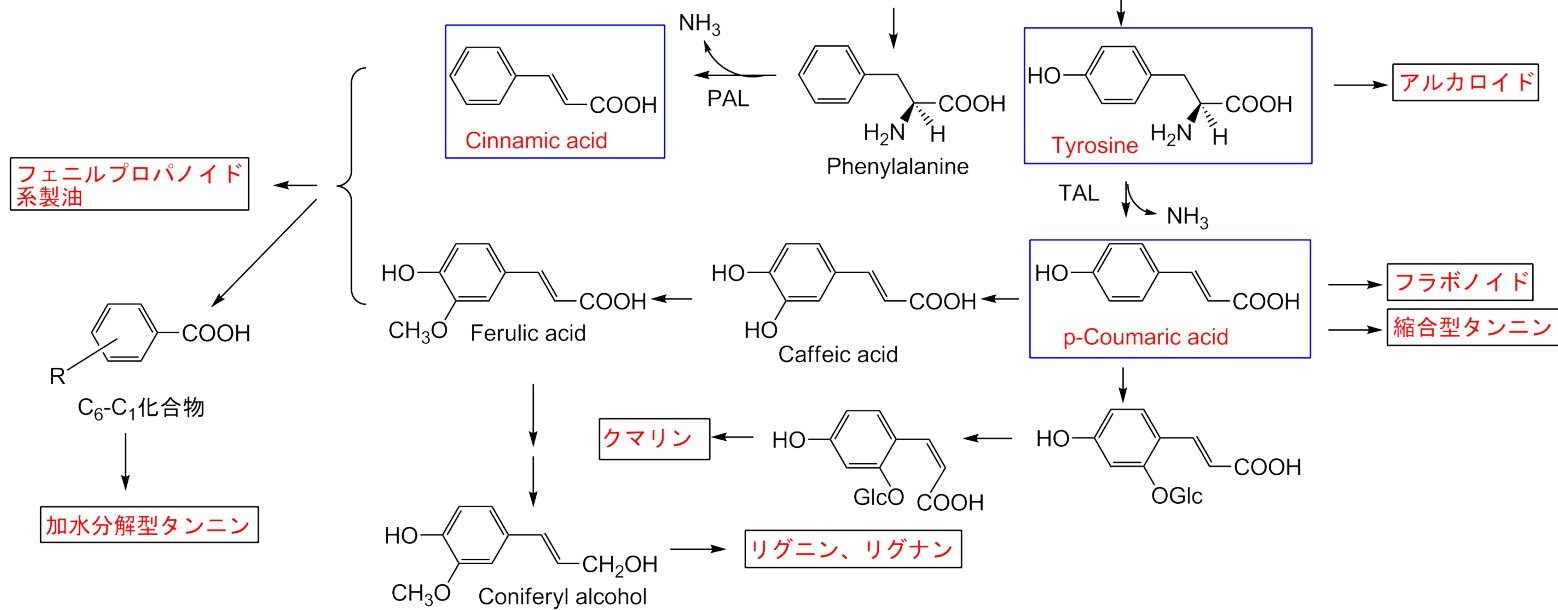


イソプレノイド生合成の概略

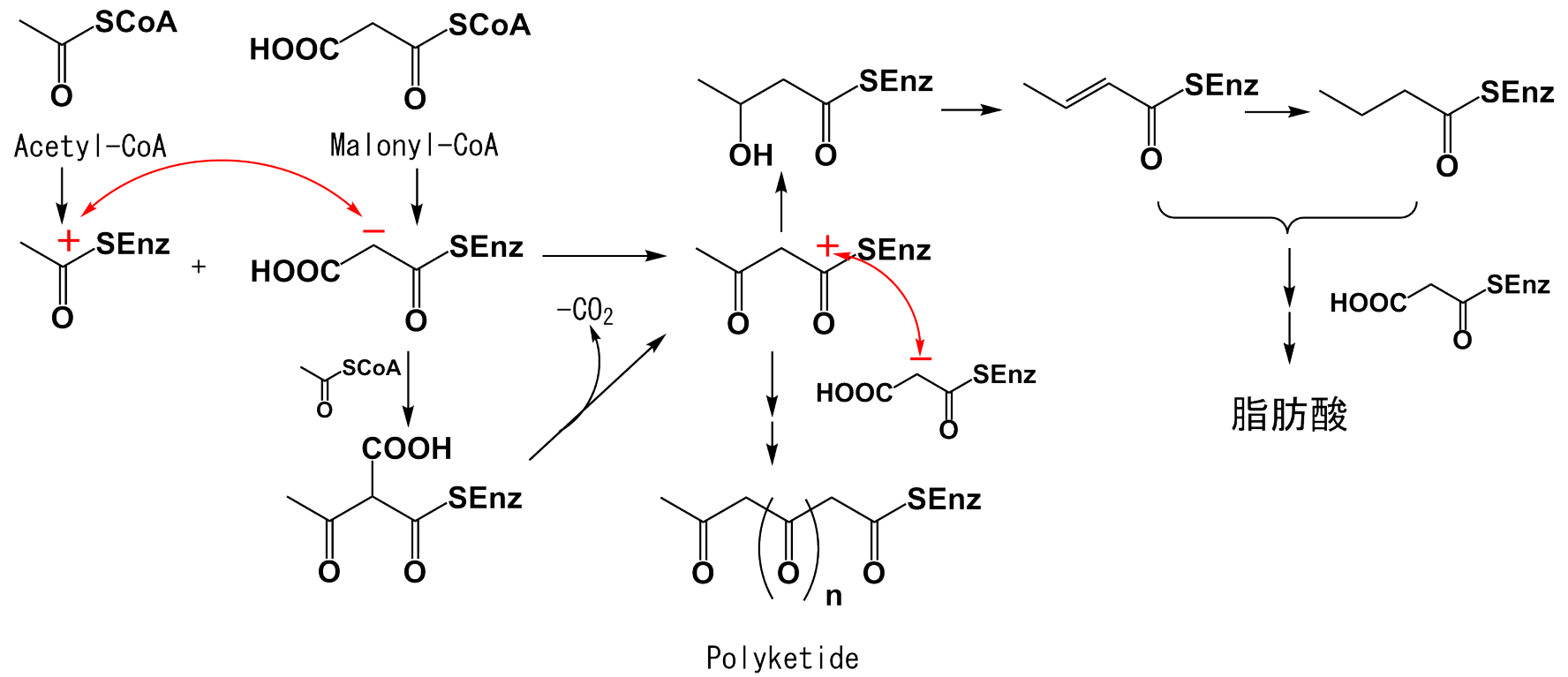


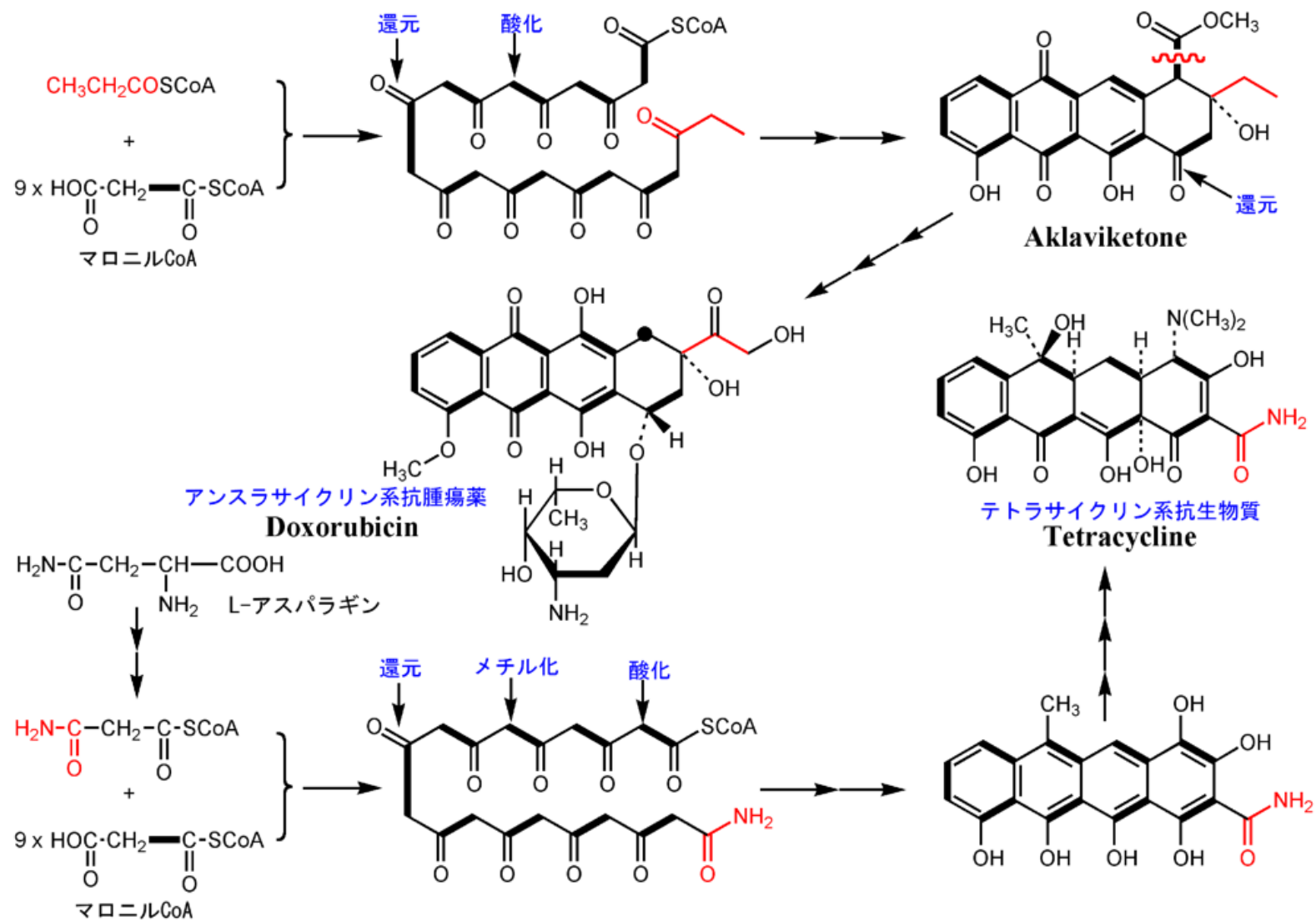


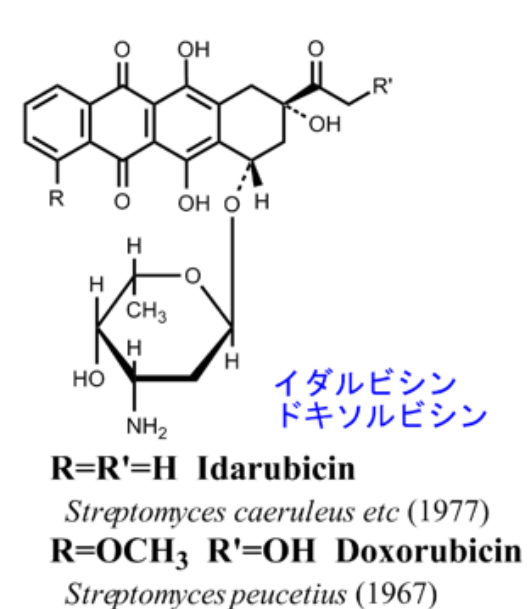
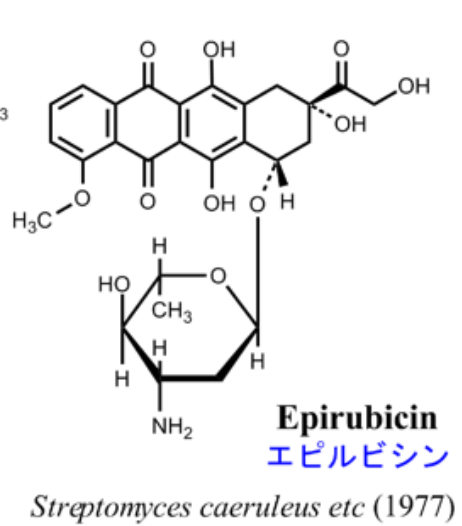
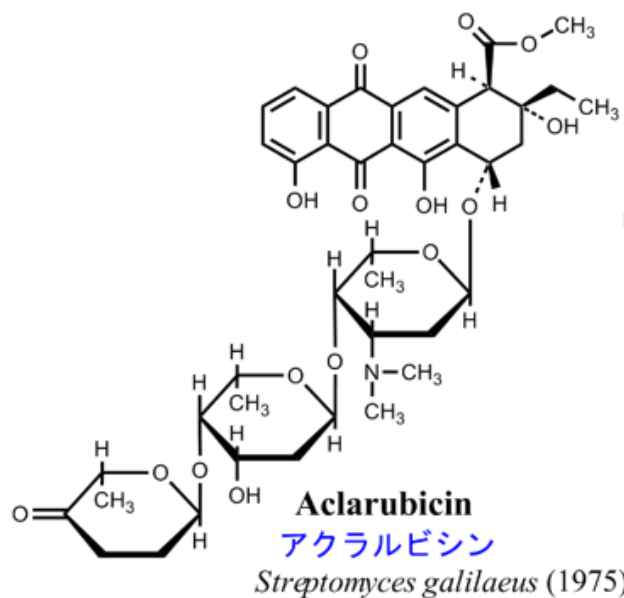
シキミ酸由来の芳香族化合物相関



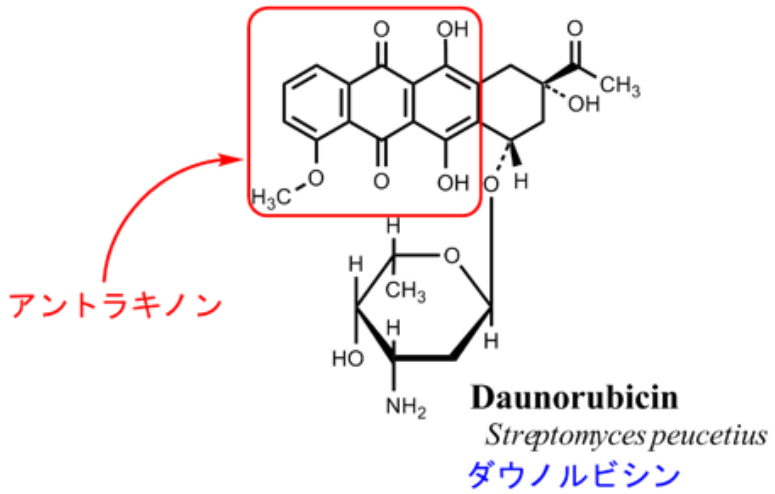
ポリケチドと脂肪酸の生合成



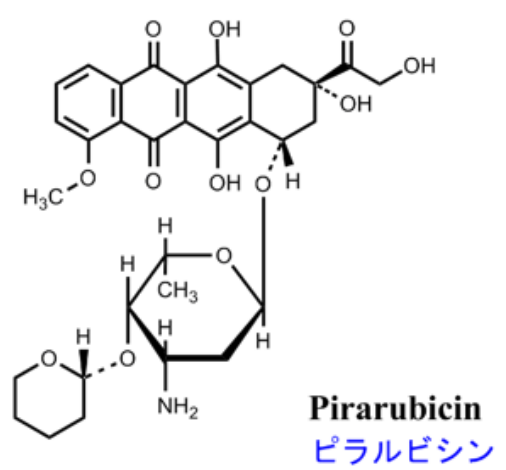


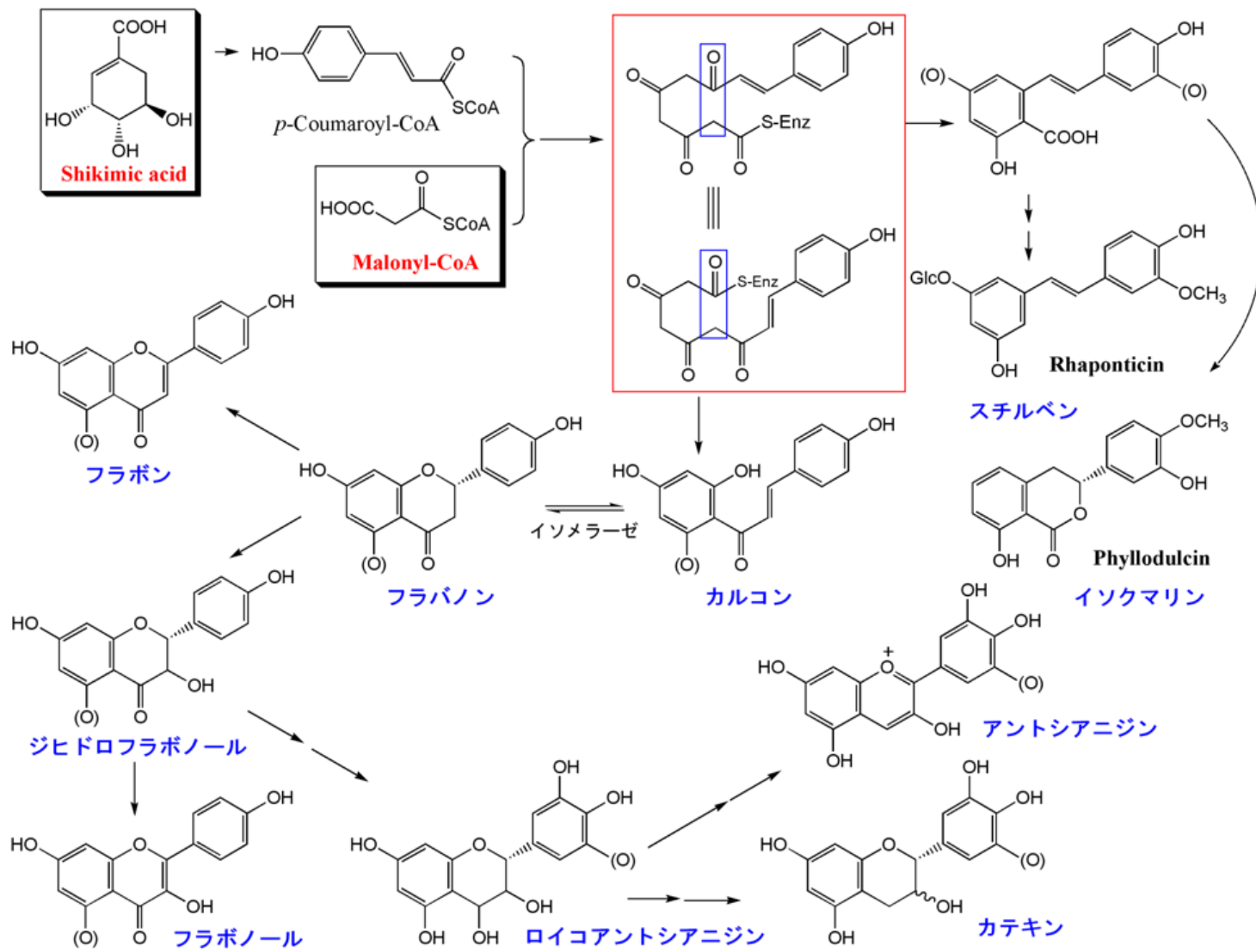


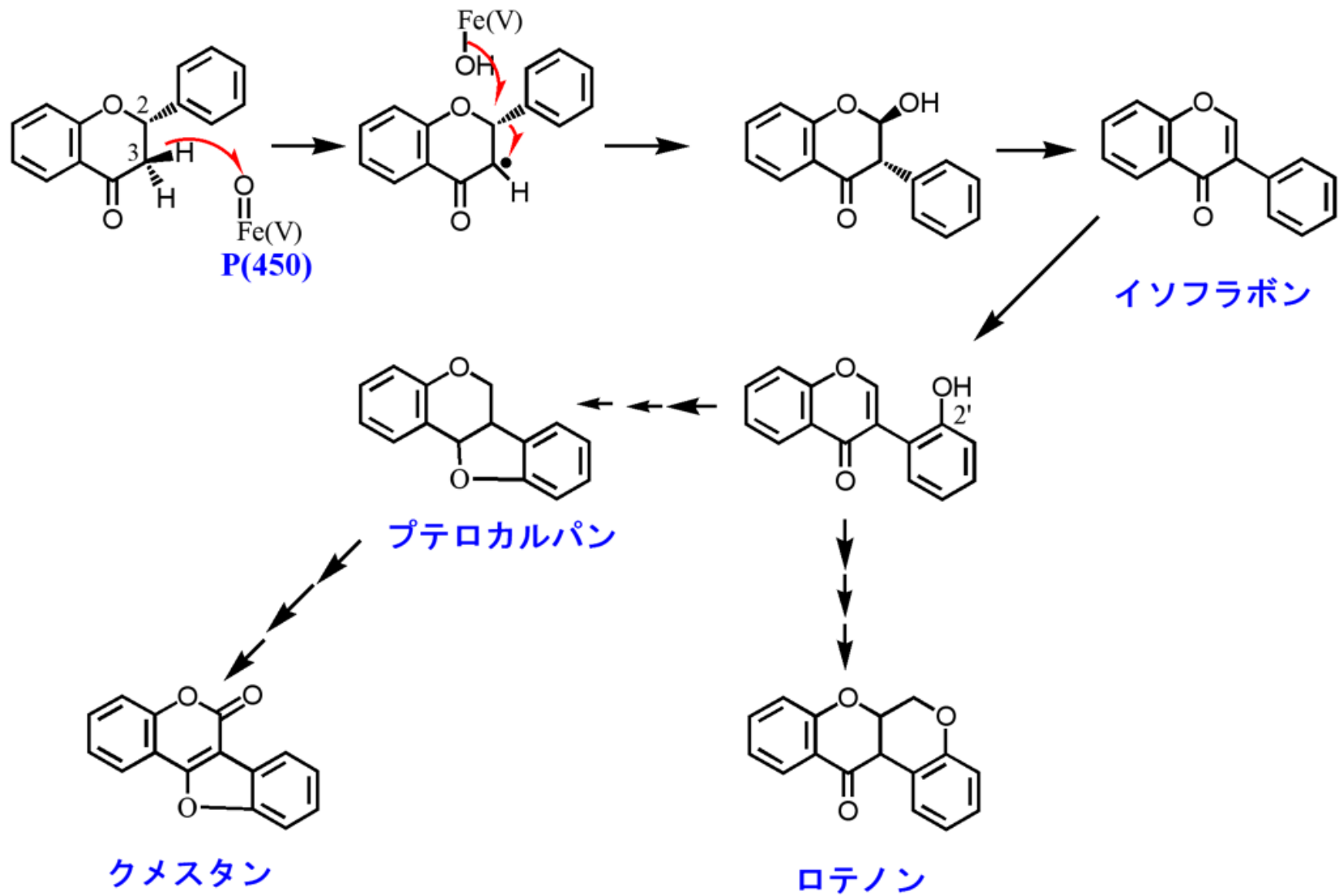
イダルビシン
ドキシソルビシン

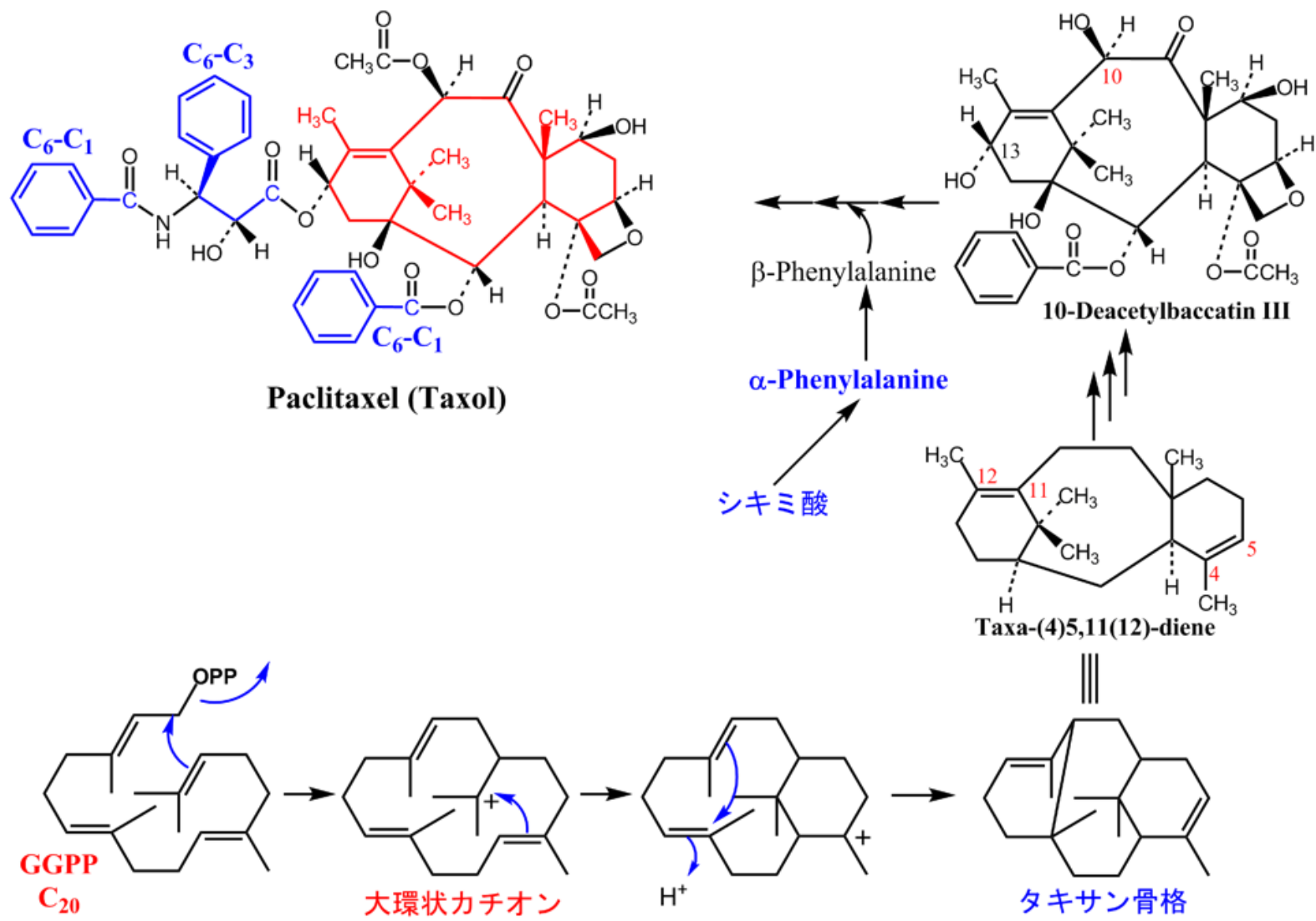


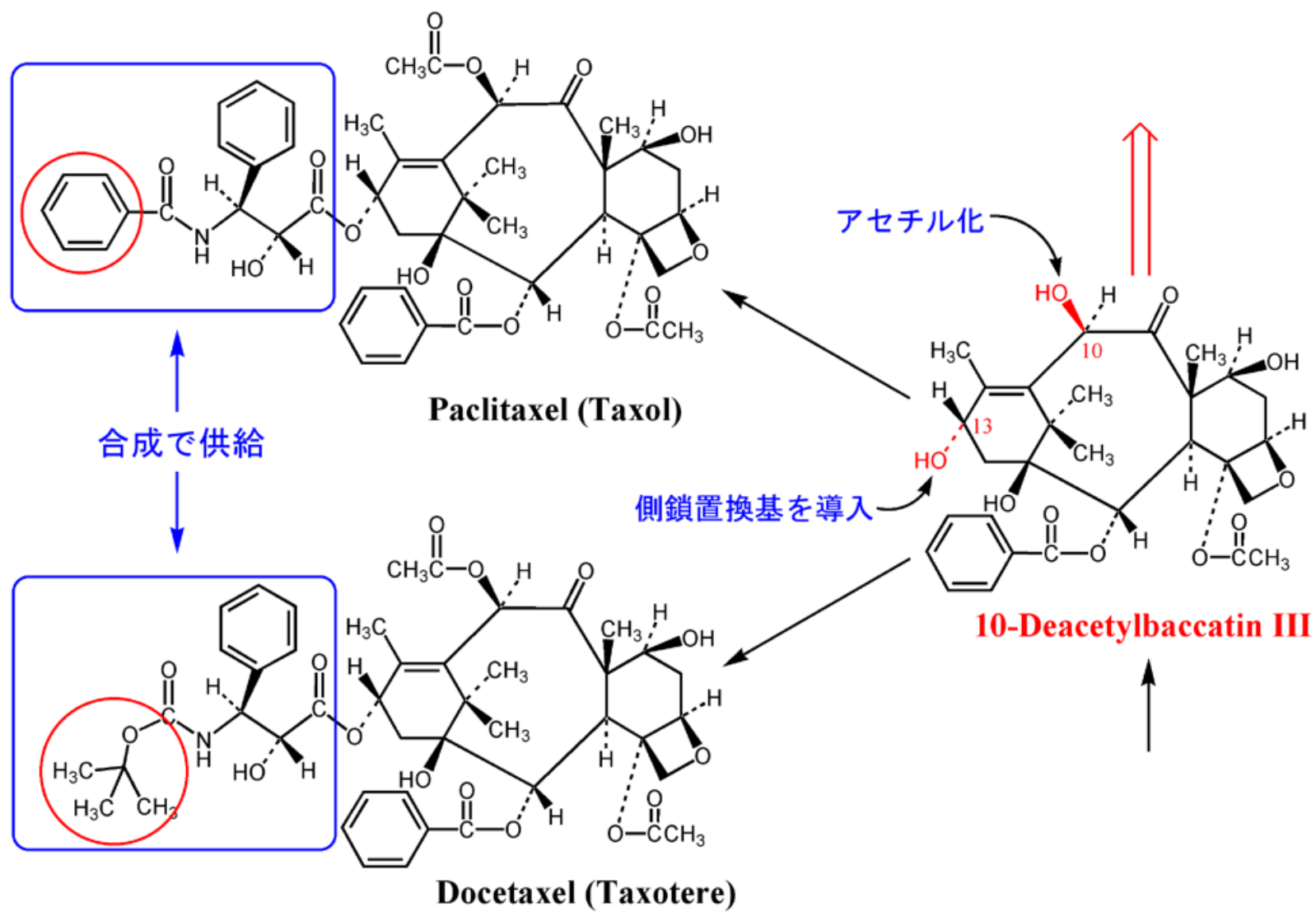
アントラキノン

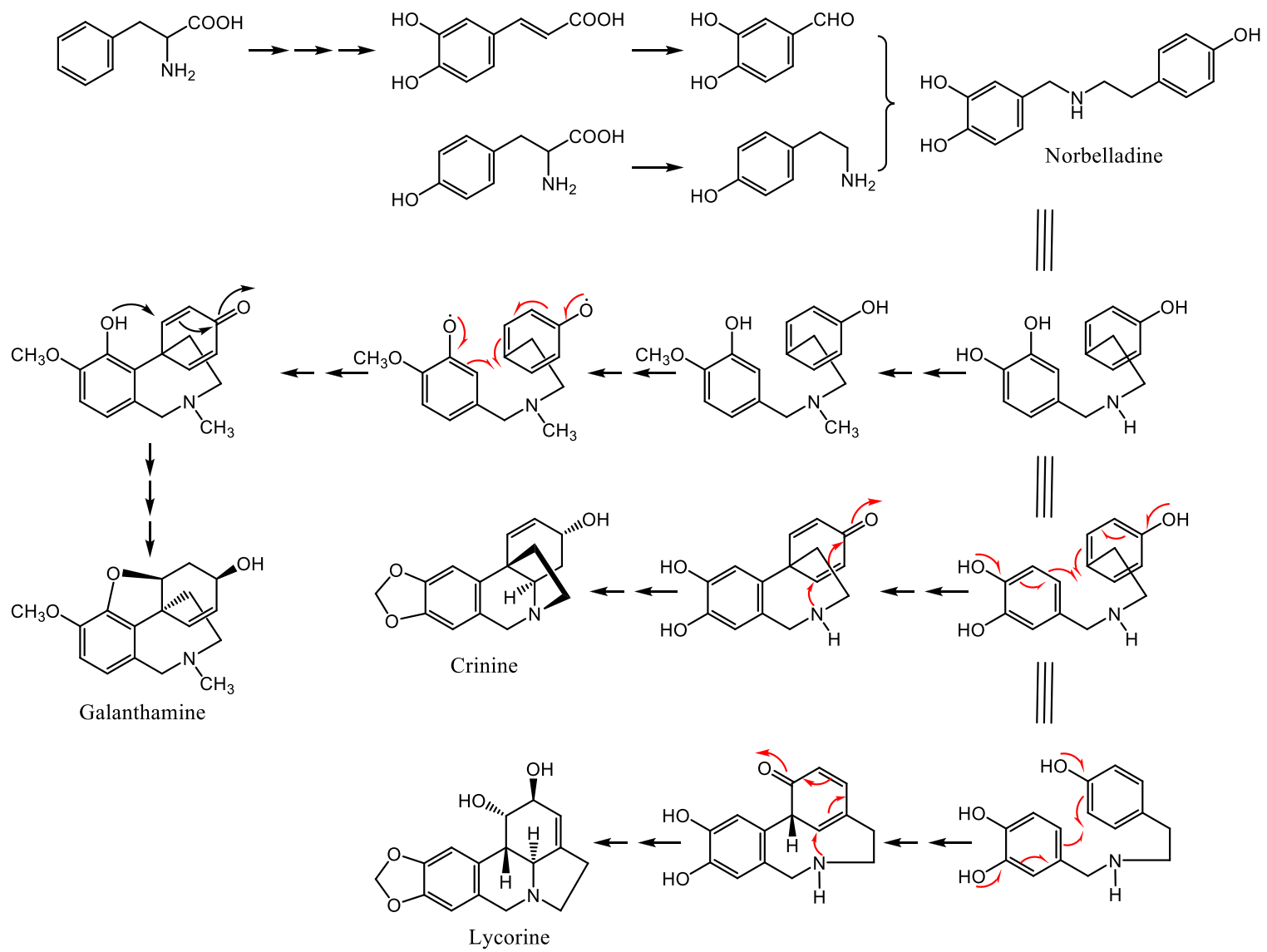


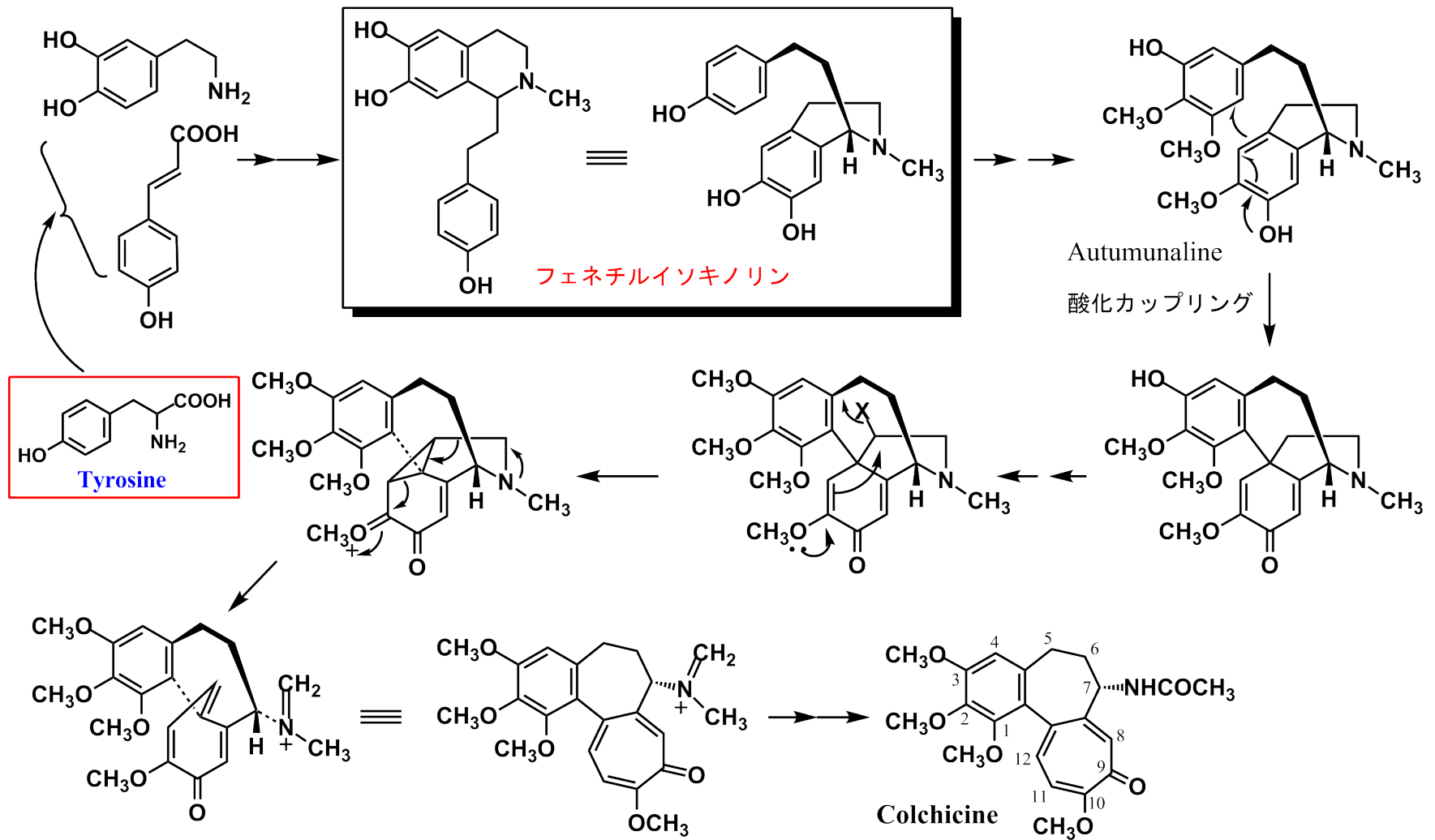


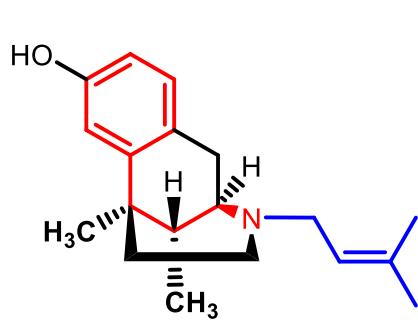




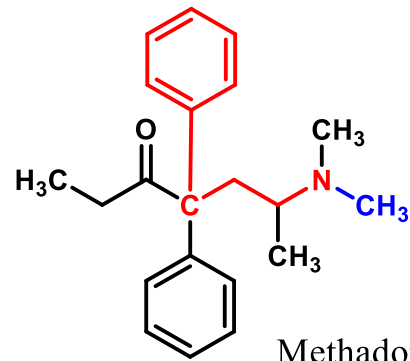




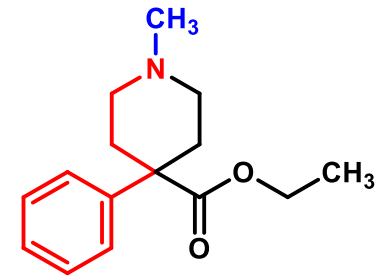




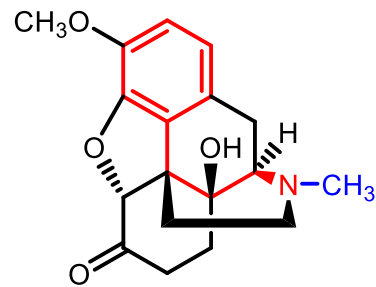
Pentazocine



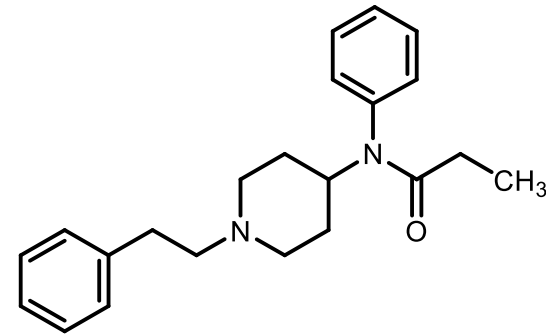
Methadone



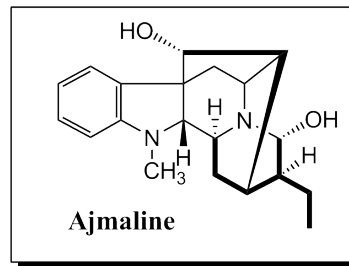
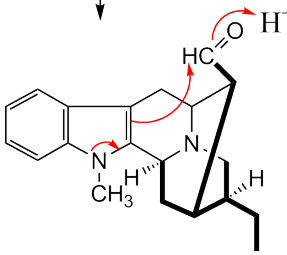
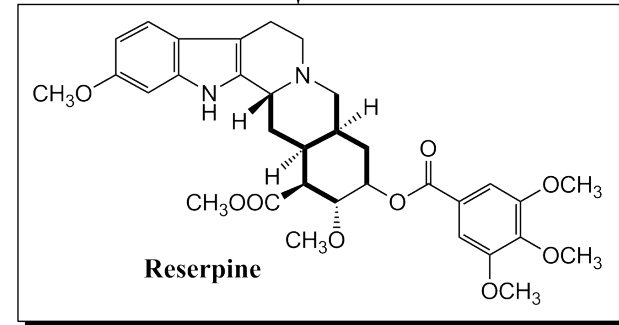
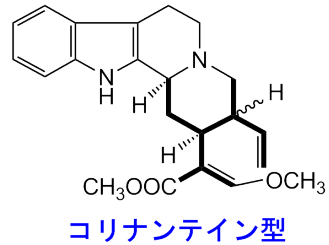
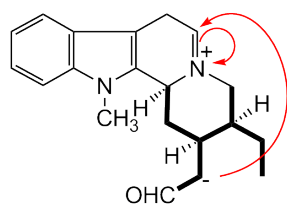
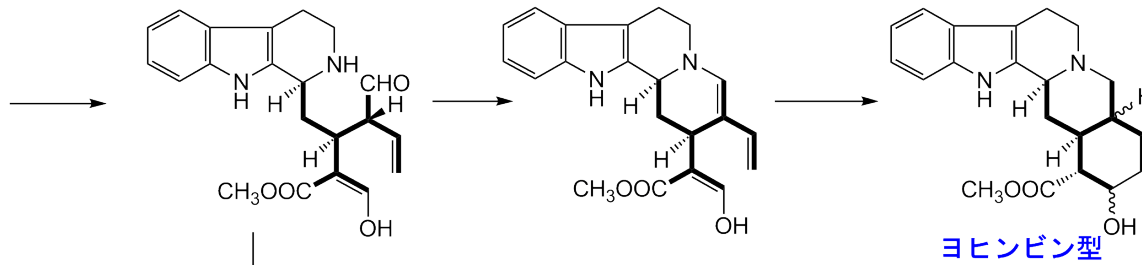
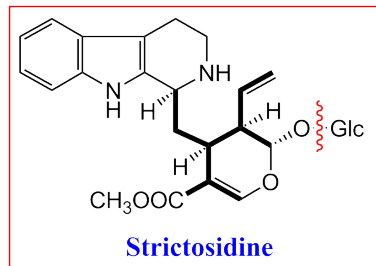
Pethidine (Meperidine)

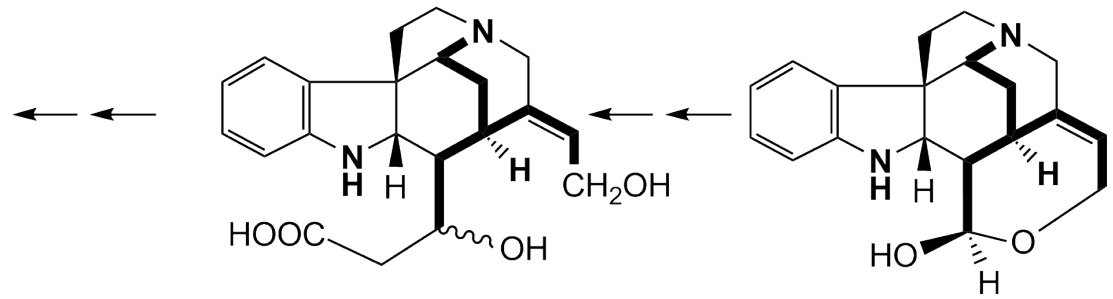
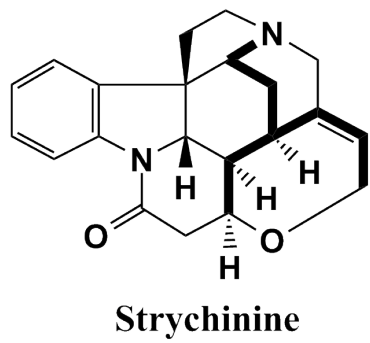
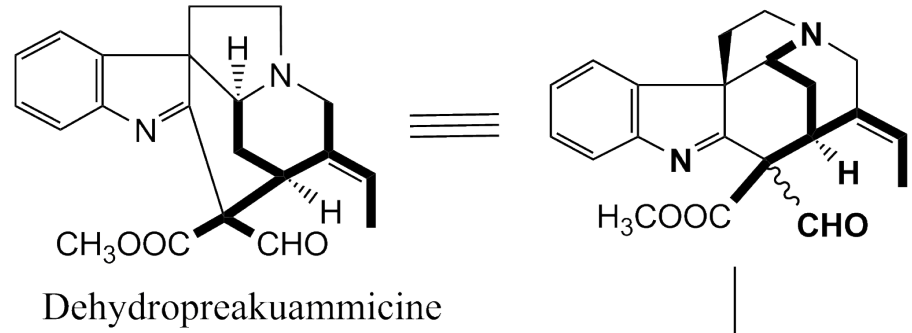
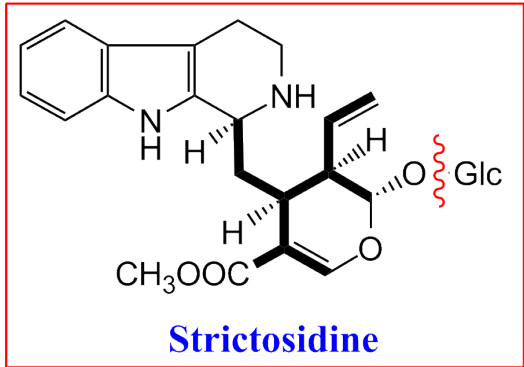


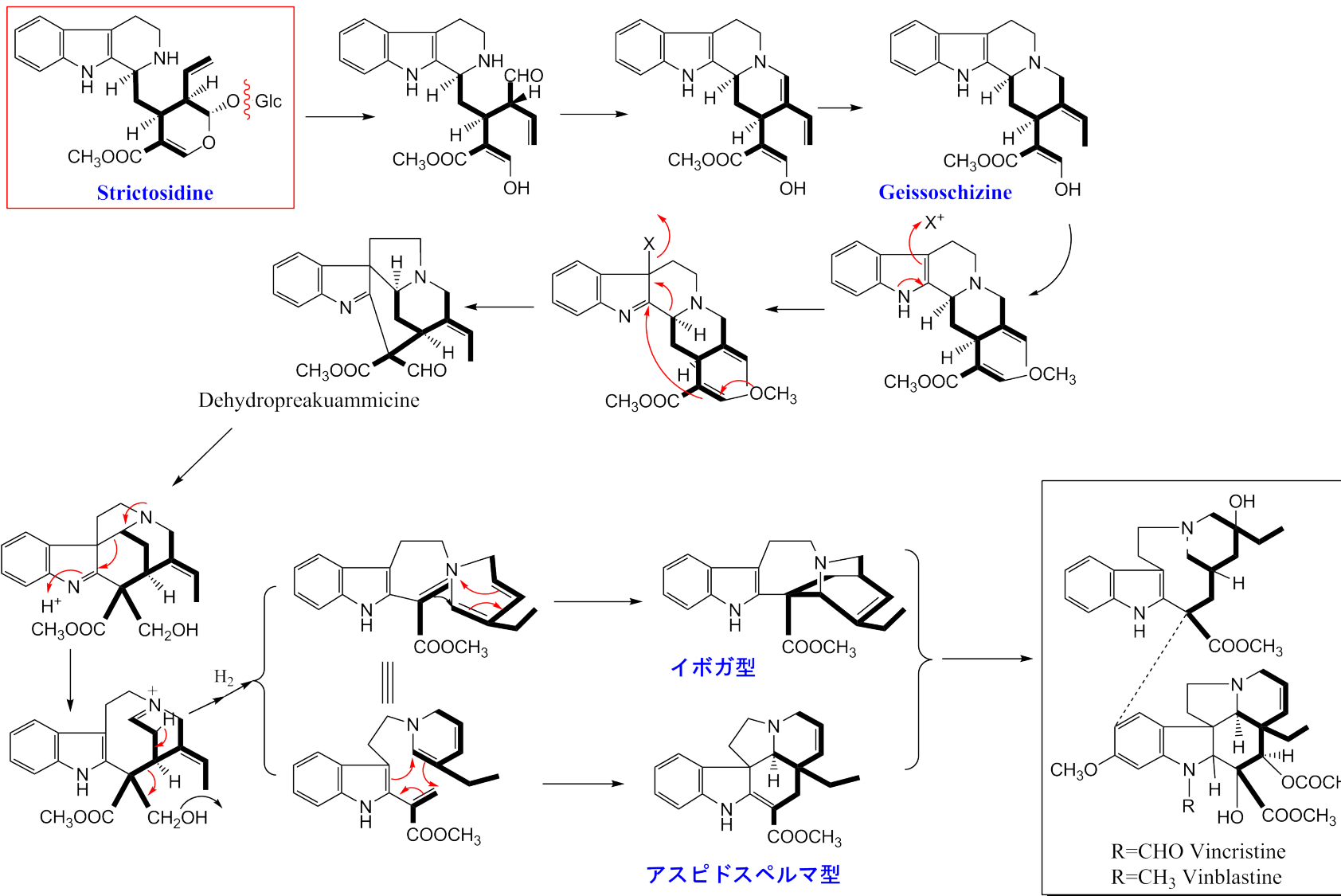
Oxycodone

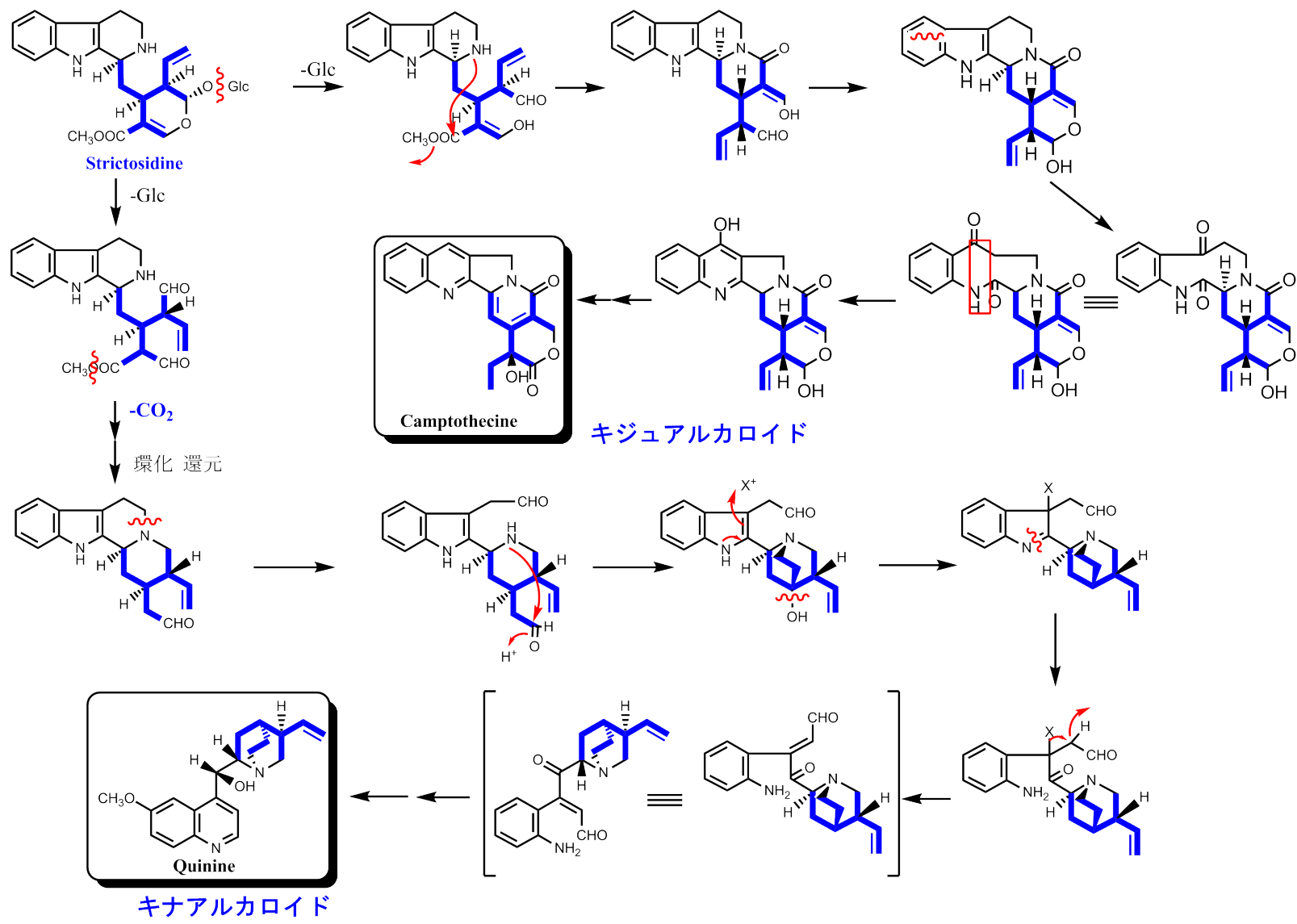


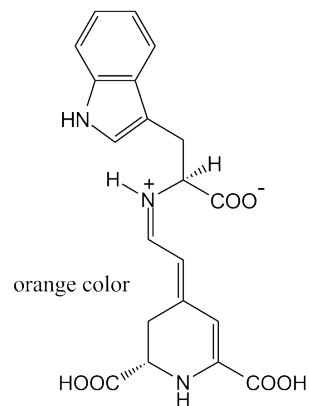
Fentanyl



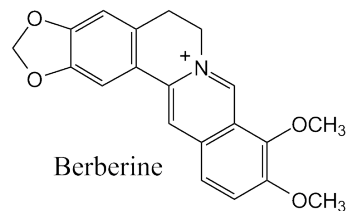








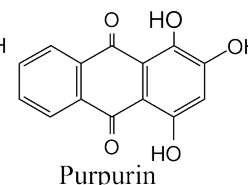
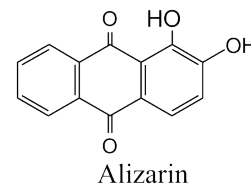
(S)-Tryptophan-beta-xanthin
Celosia argentea
 ケイトウ、ヒユ科



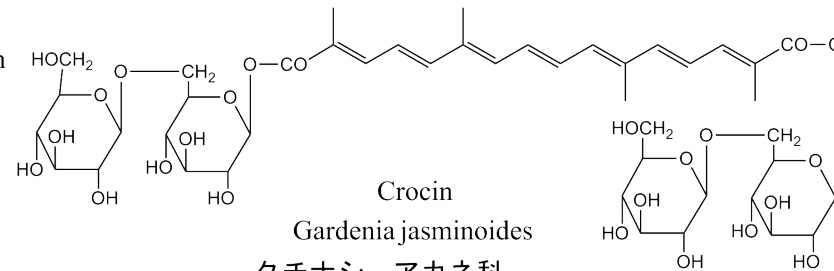
Phellodendron amurense
 キハダ、ミカン科



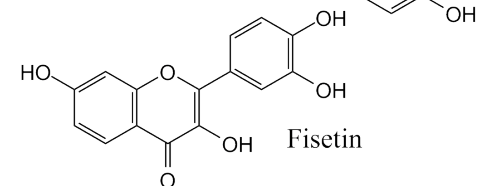
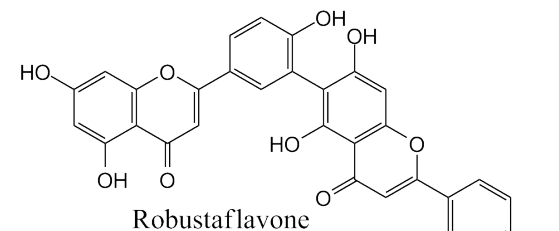
Lithospermum erythrorrhizon
 ムラサキ、ムラサキ科



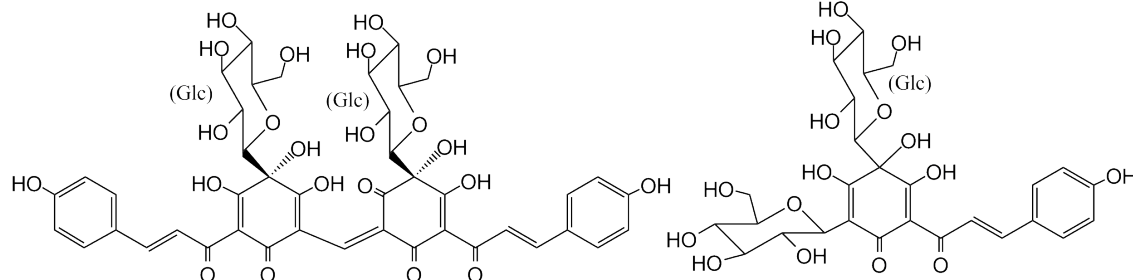
Rubia argyi アカネ、アカネ科



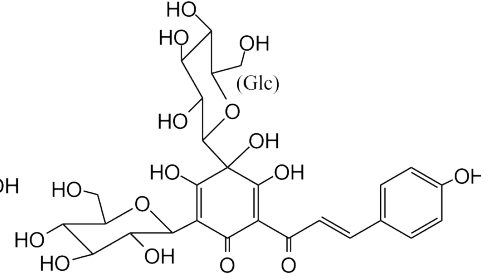
Gardenia jasminoides
 クチナシ、アカネ科



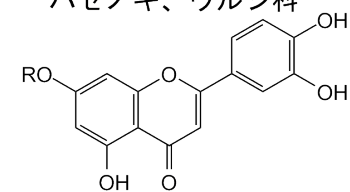
Toxicodendron succedaneum
 ハゼノキ、ウルシ科



Carthamus tinctorius



Benincasa, キク科



R=Glc Luteorin-7-glucoside

Miscanthus tinctorius
 and *Arthraxon hispidus*
 カリヤス・コブナグサ科