



ТЕРПЕНЫ И СТЕРОИДЫ

Department of chemistry

Kazan State
Medical University



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Тмин



Мята перечная

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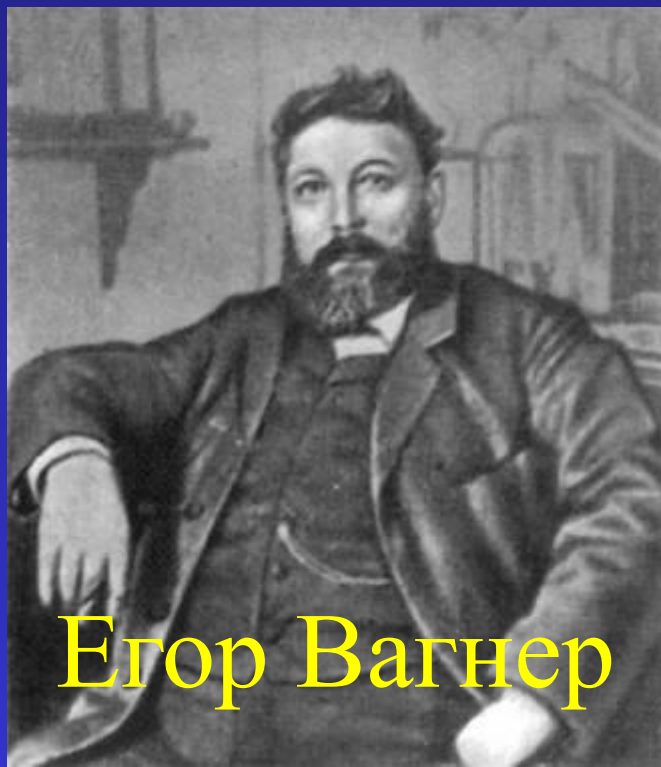
Kazan State

Medical University





Александр
Арбузов



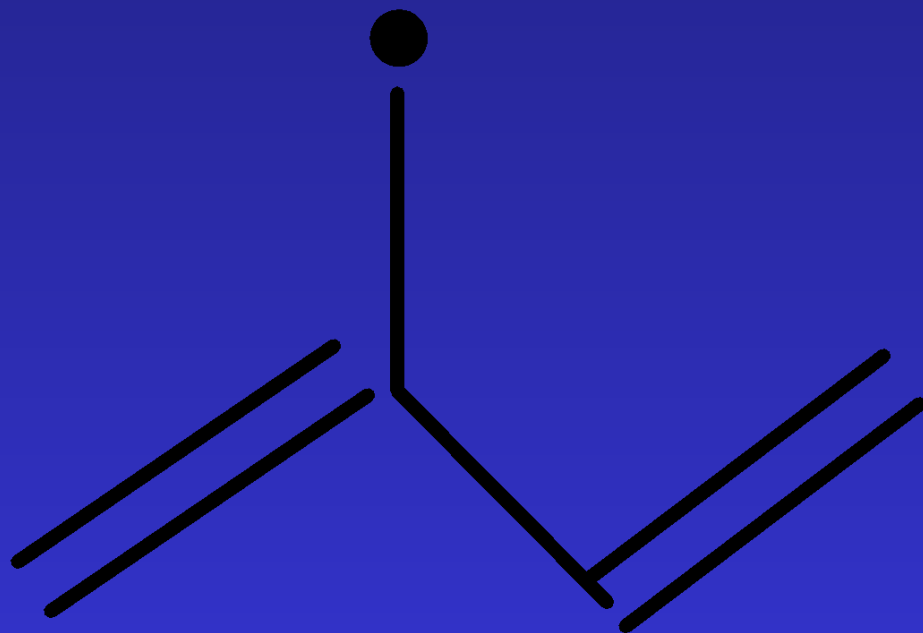
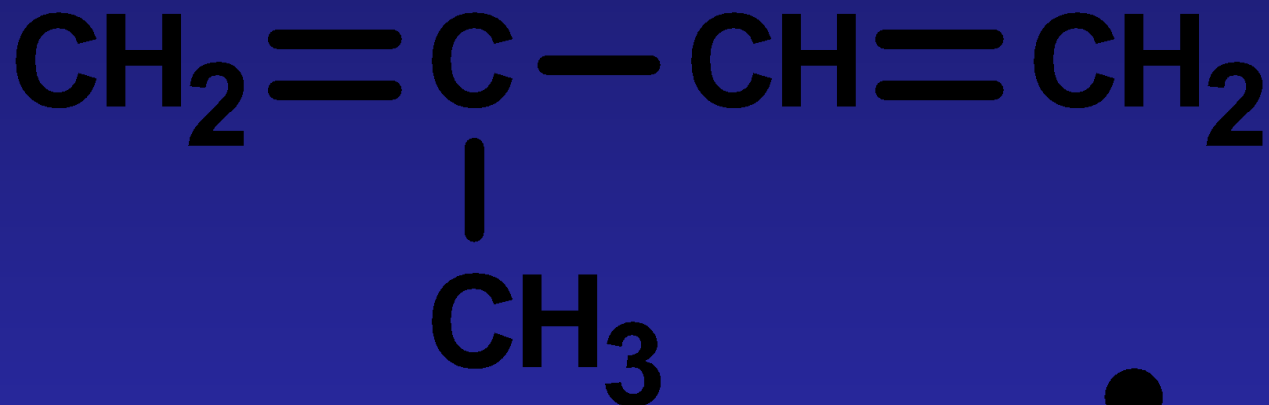
Егор Вагнер



Борис
Арбузов



2-метилбутадиен-1,3 (IUPAC) или изопрен





Монотерпены



Сесквитерпены



Дитерпены



Тритерпены



Тетратерпены

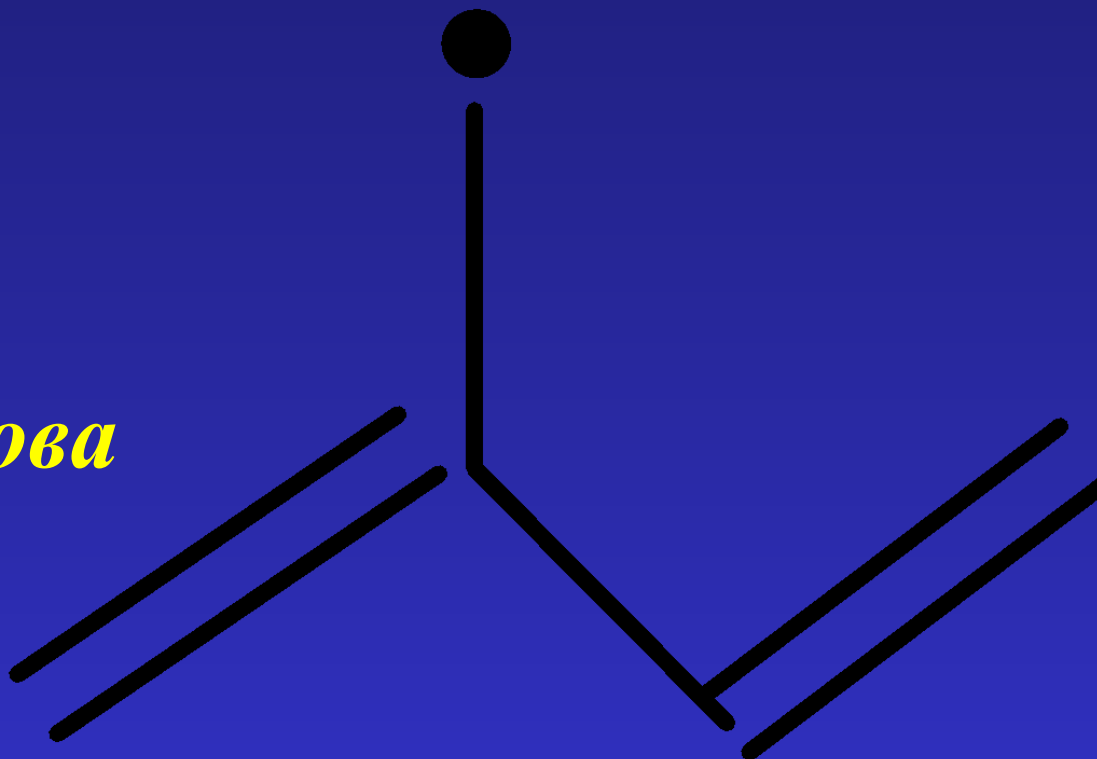


Политерпены

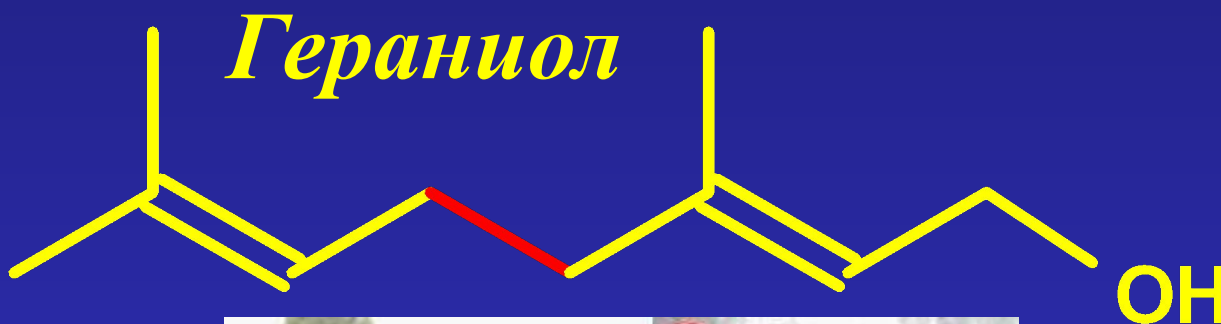




голова

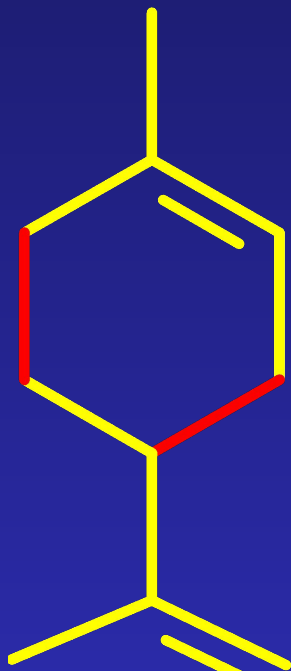


хвост

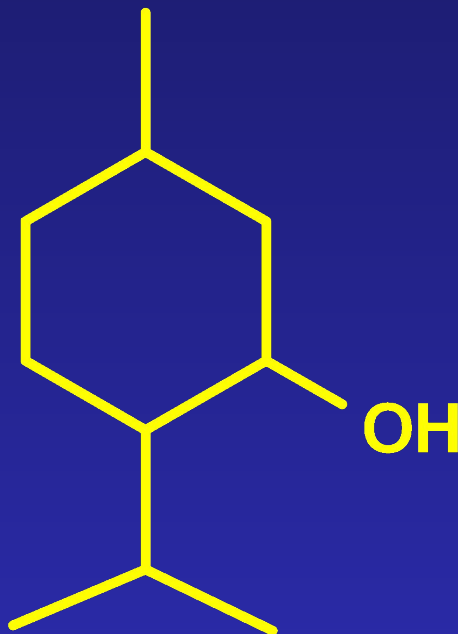




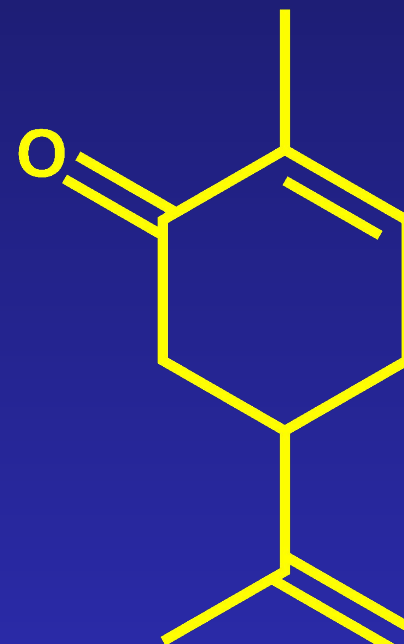
Лимонен



Ментол



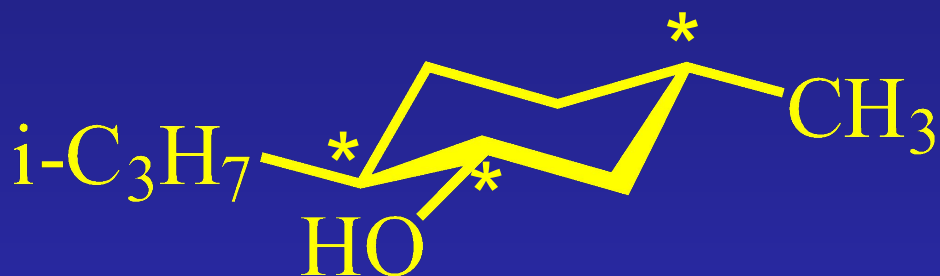
Карвон



Тмин



Ментол



наиболее устойчивый из
оптических изомеров с
экваториальным расположением
всех заместителей

Количество
ВОЗМОЖНЫХ
ОПТИЧЕСКИХ ИЗОМЕРОВ

равно 2^n

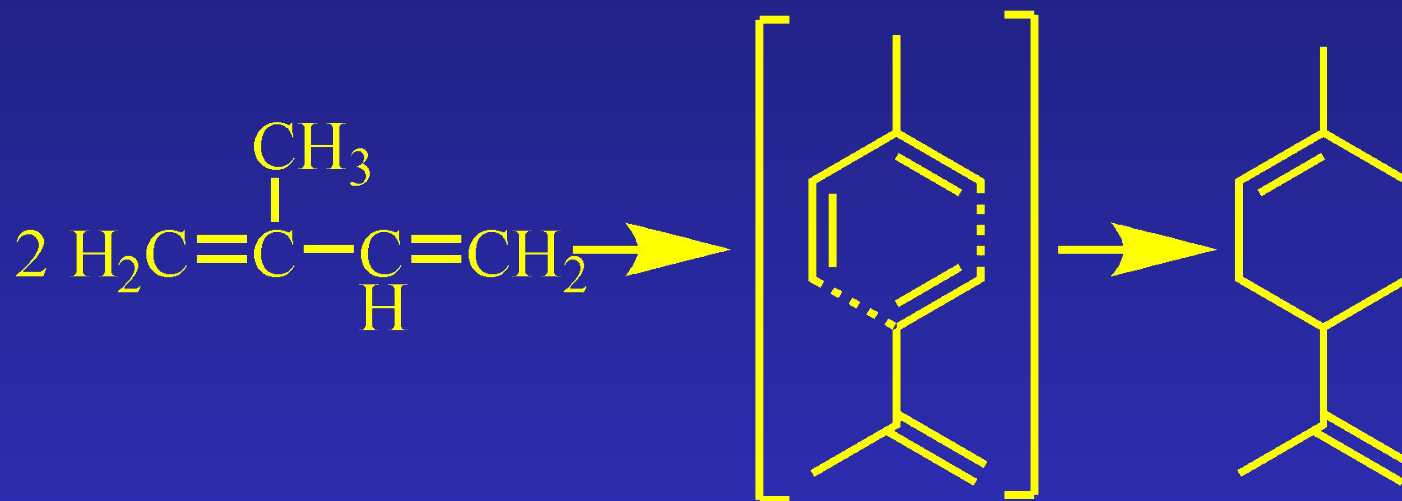
$$n=3$$

Следовательно,

$$2^3 = 8$$



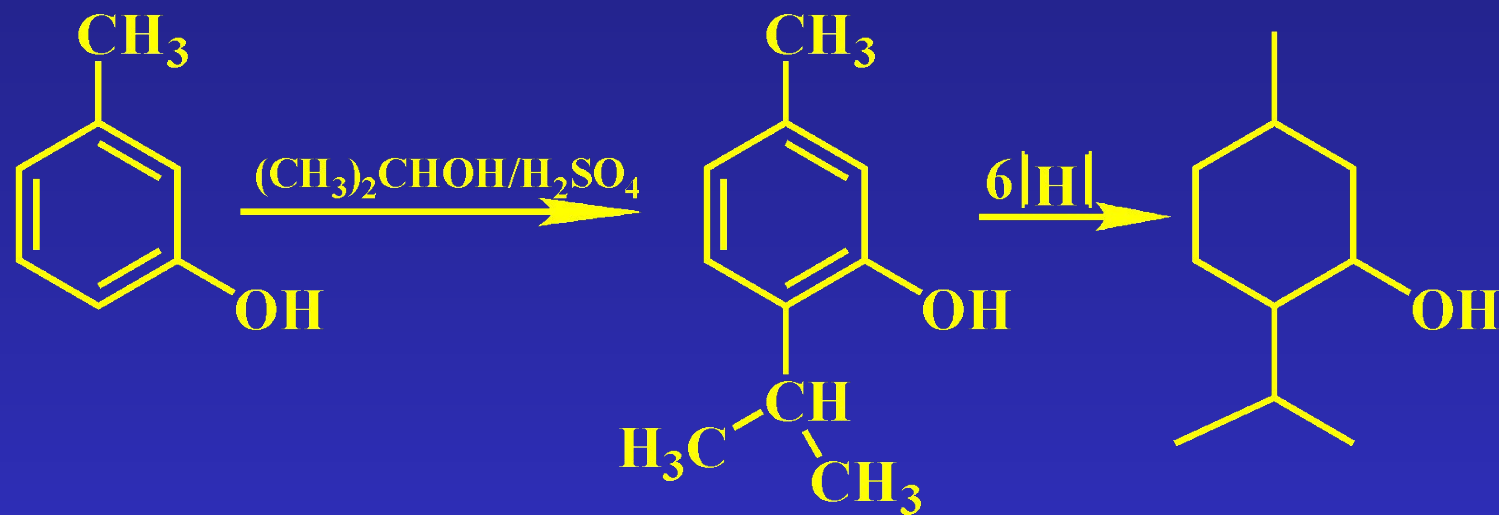
Диеновый синтез

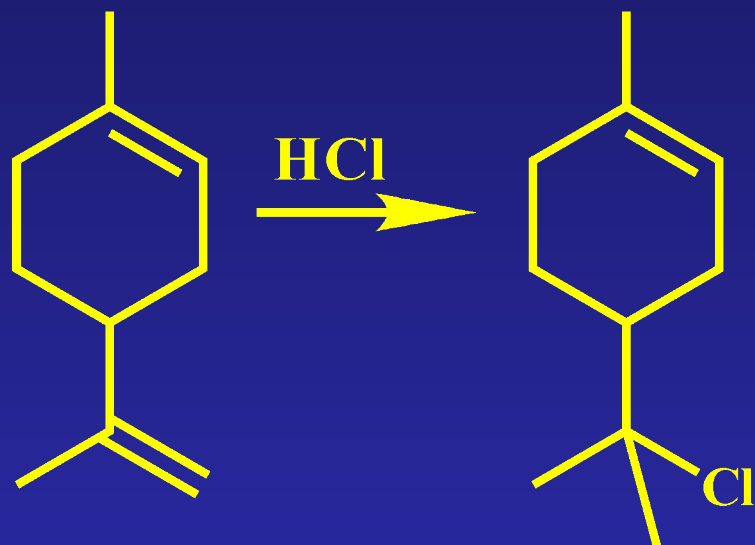


Дипентен



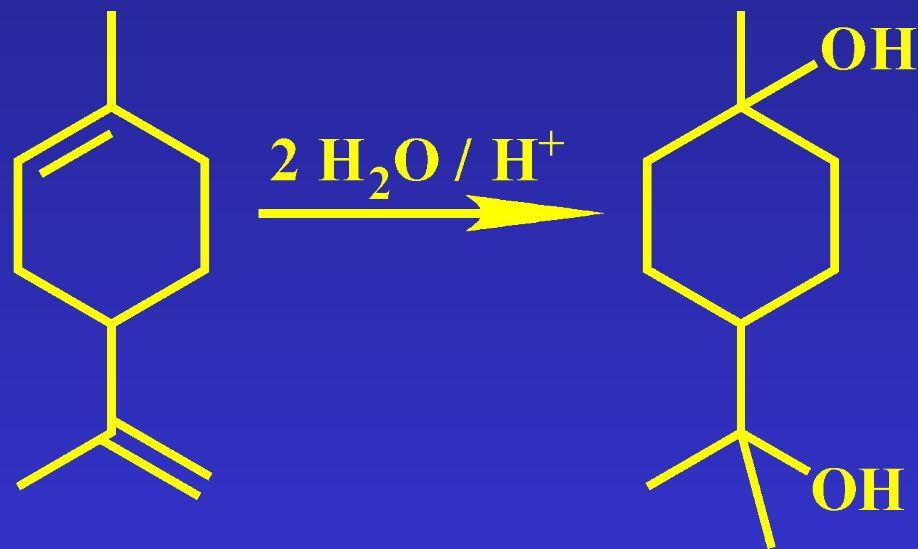
Получение рацемического ментола в промышленности





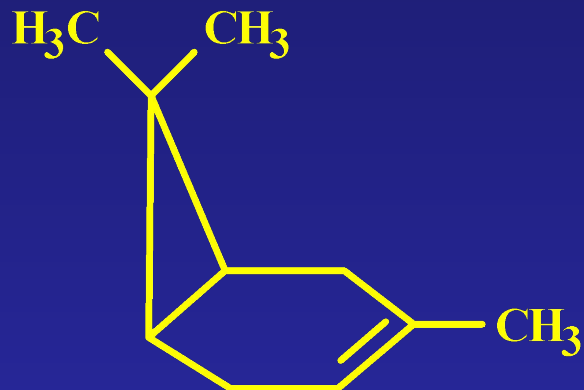
Химические свойства моноциклических монотерпенов

*в соответствии с
правилом
Марковникова*

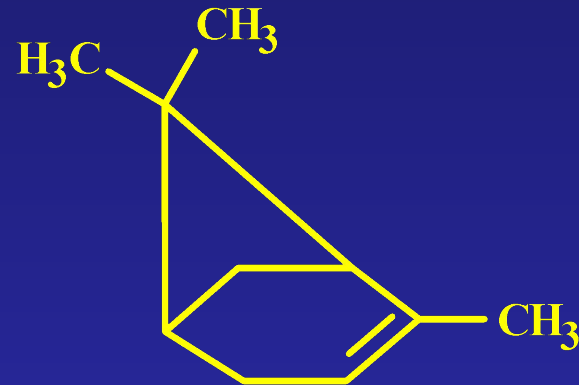




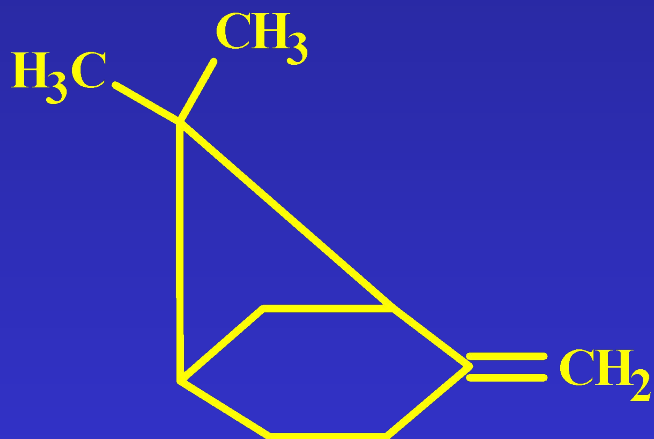
3 - карен



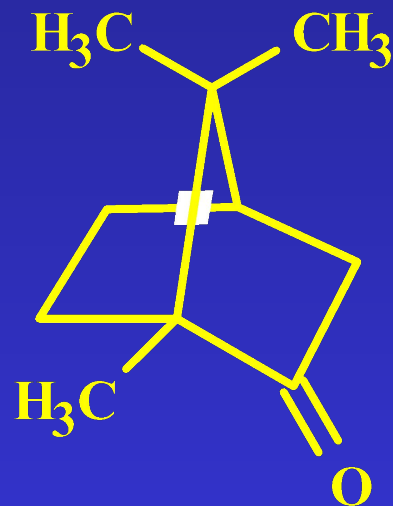
α - пинен



β - пинен

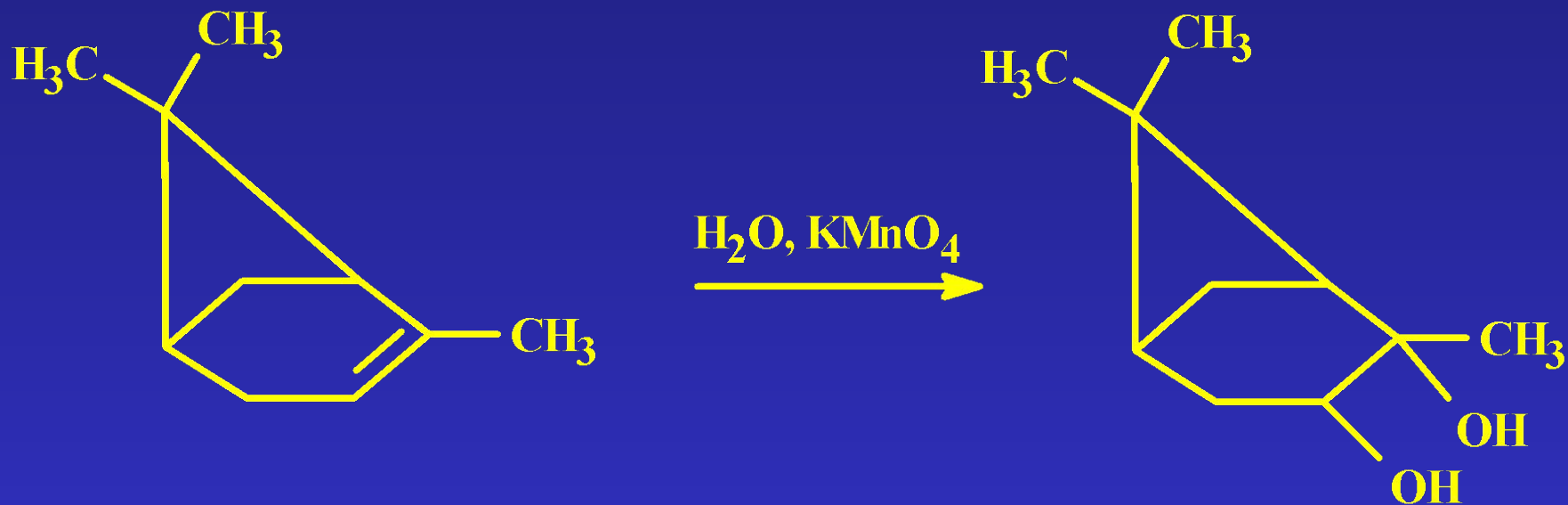


камфора



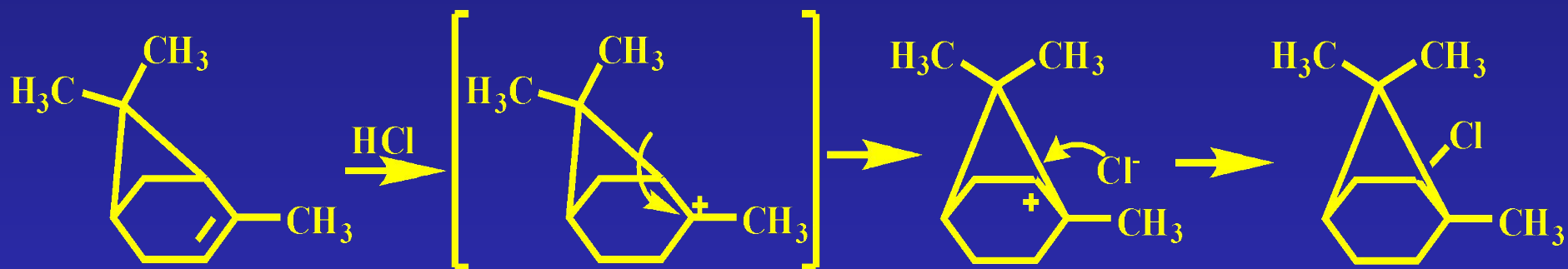


Реакция Вагнера



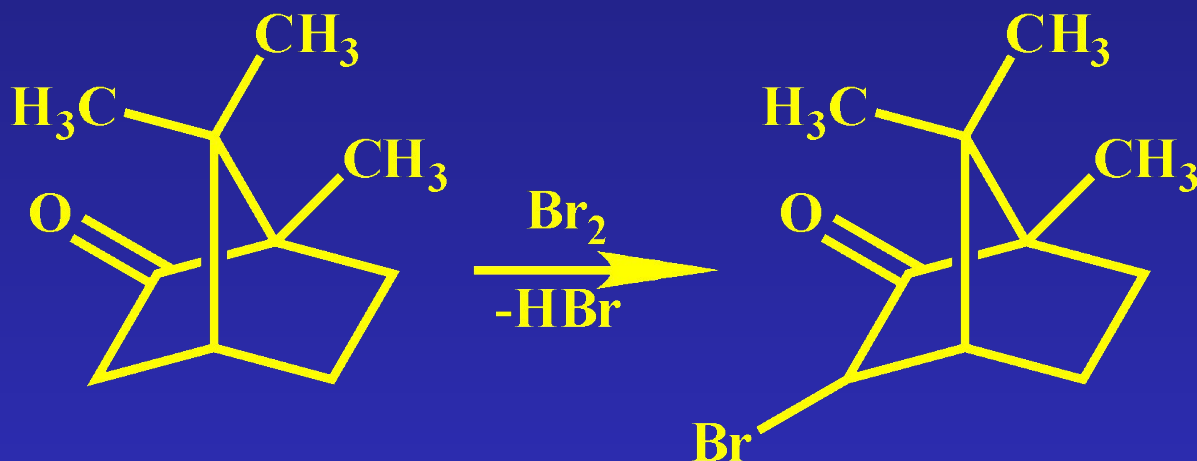


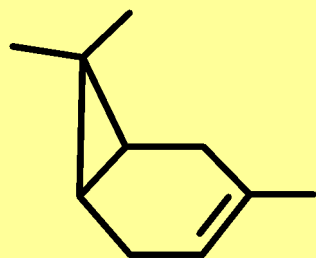
Перегруппировка Вагнера-Меервейна



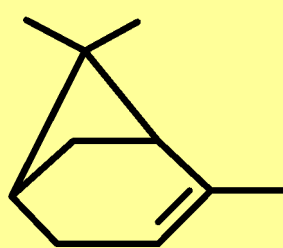


Бромирование камфоры

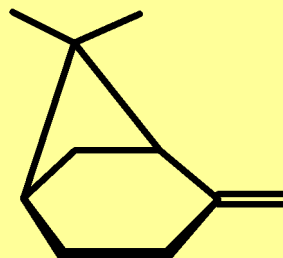




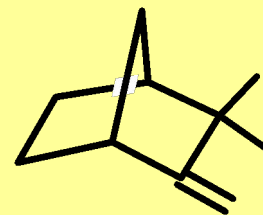
3-карен



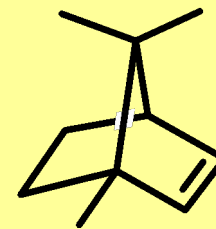
α -пинен



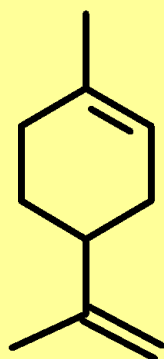
β -пинен



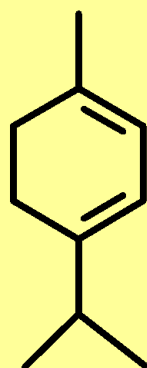
камфен



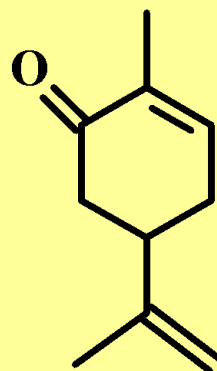
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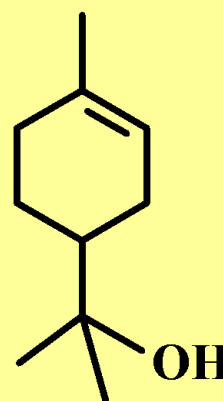
лимонен



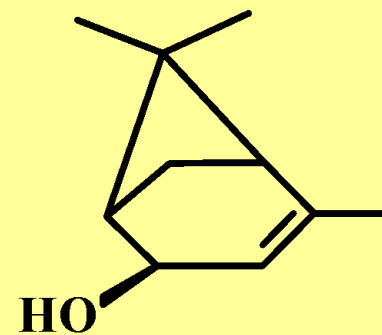
α -терпинен



карвон



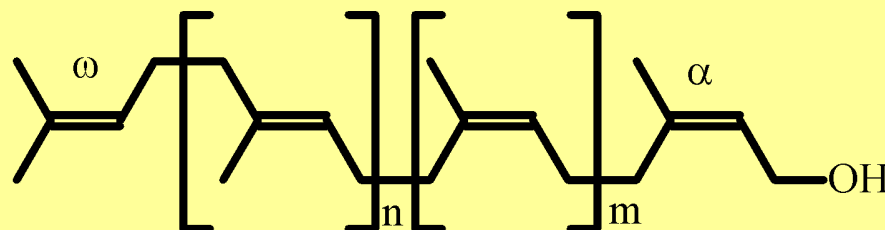
α -терпениол



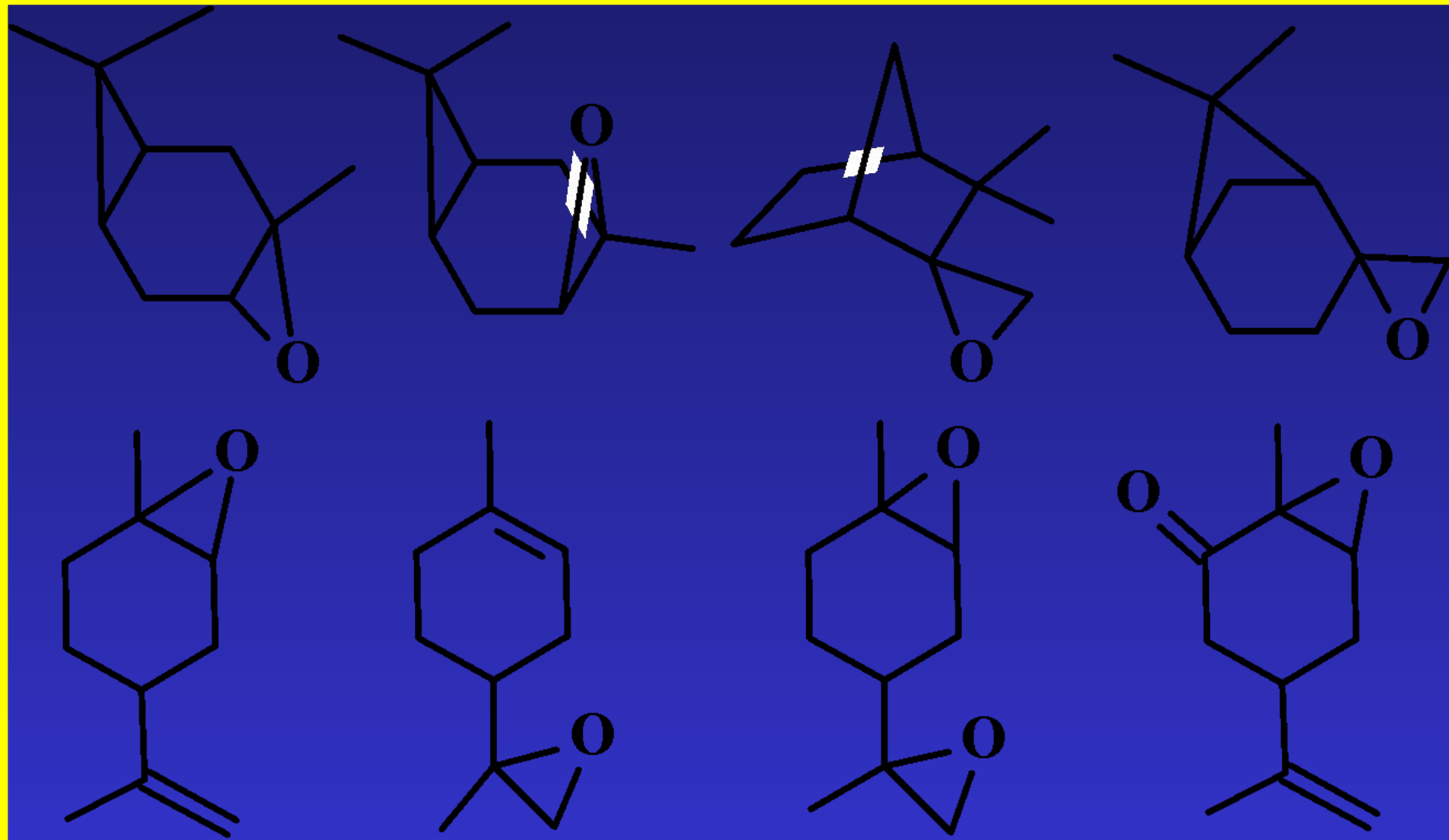
цис-вербенол

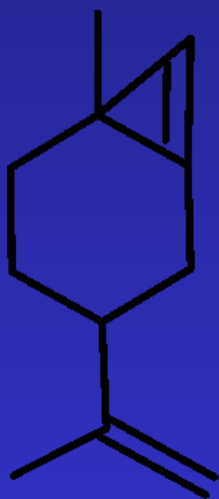
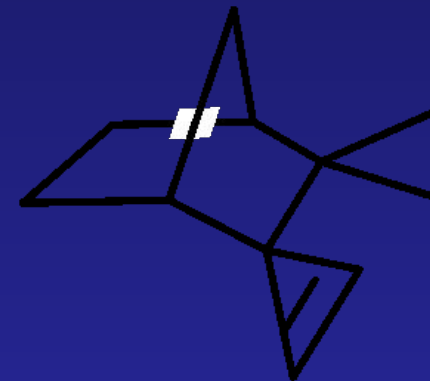
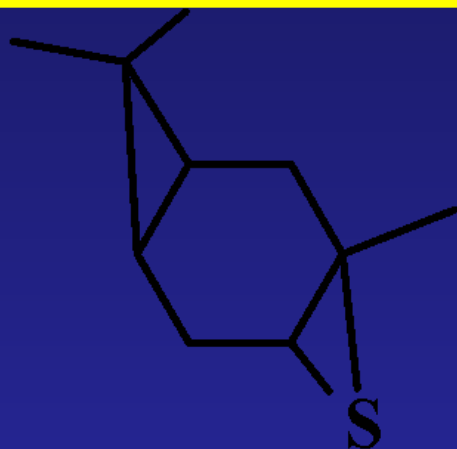
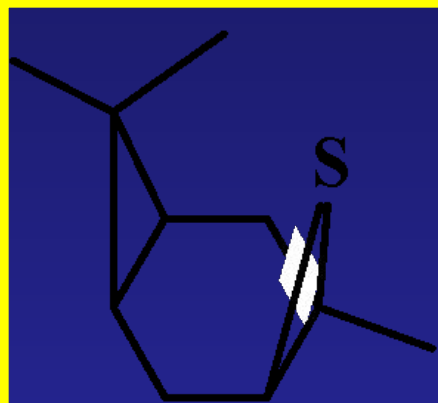


аллоцимен

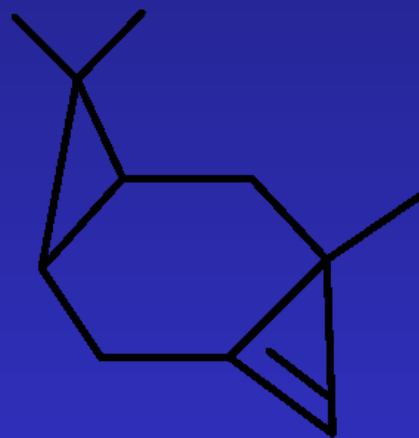


полипренол

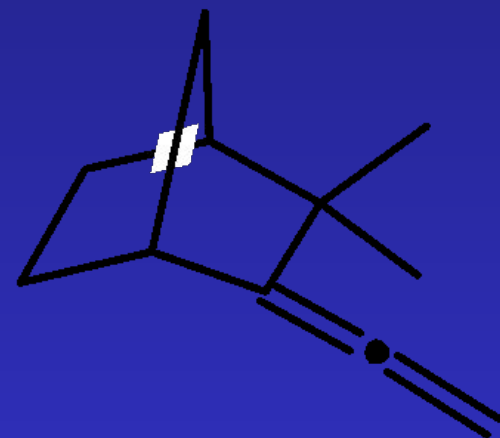


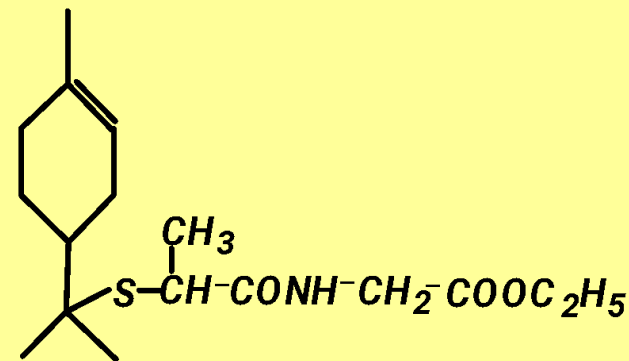
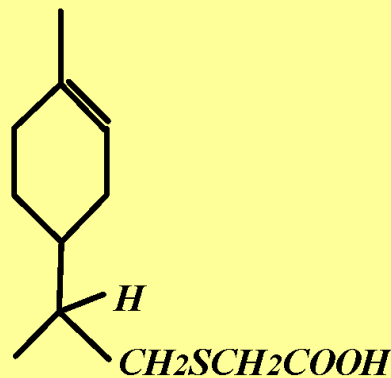
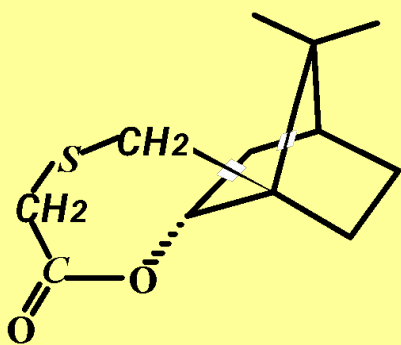
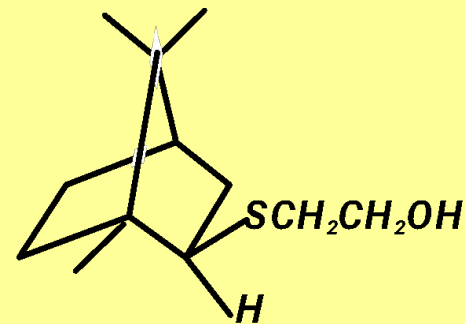
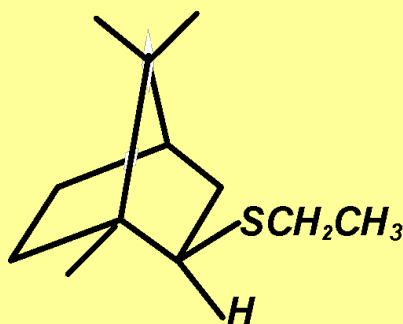
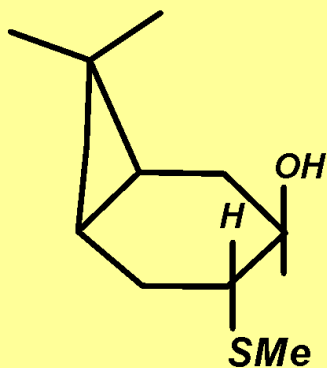
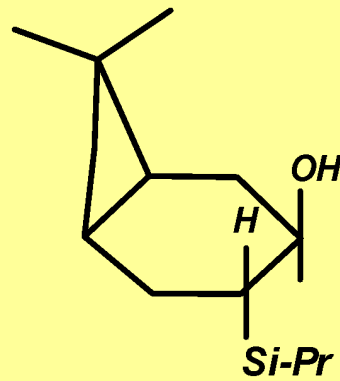
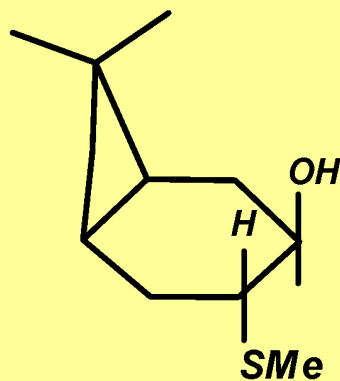


in situ

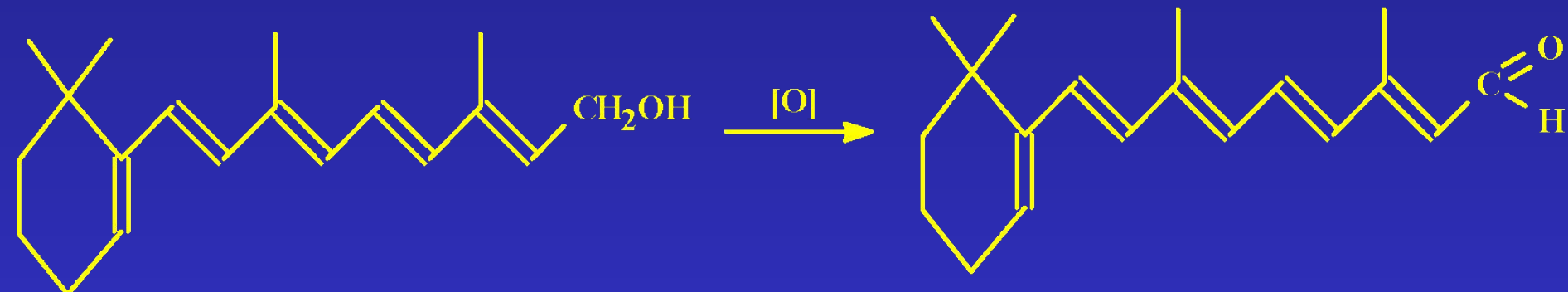


in situ





β - каротин

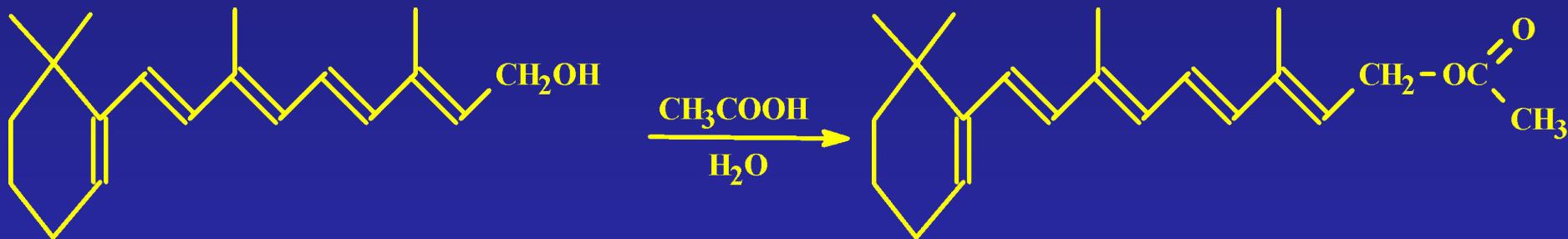


ретинол (витамин А)

ретиналь

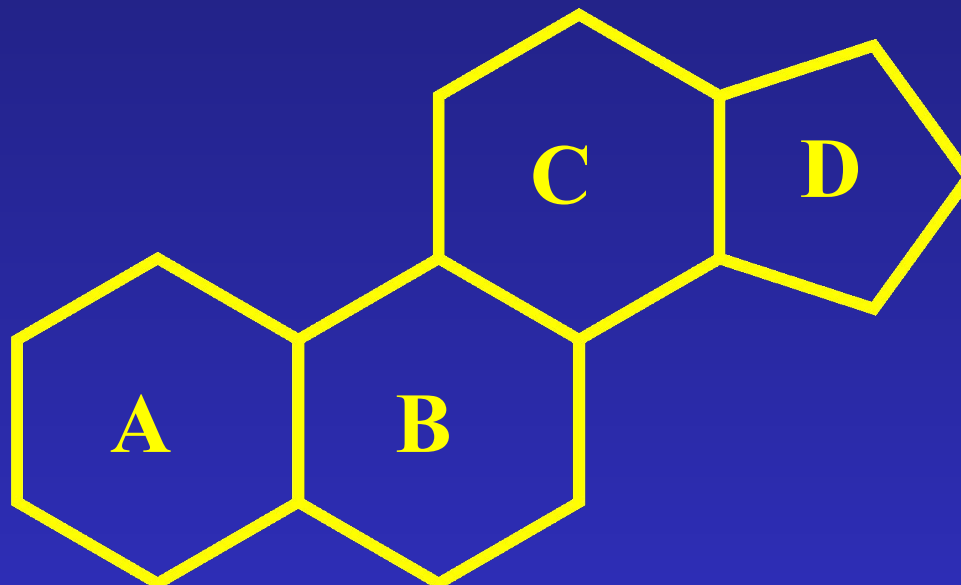


ретинолацетат



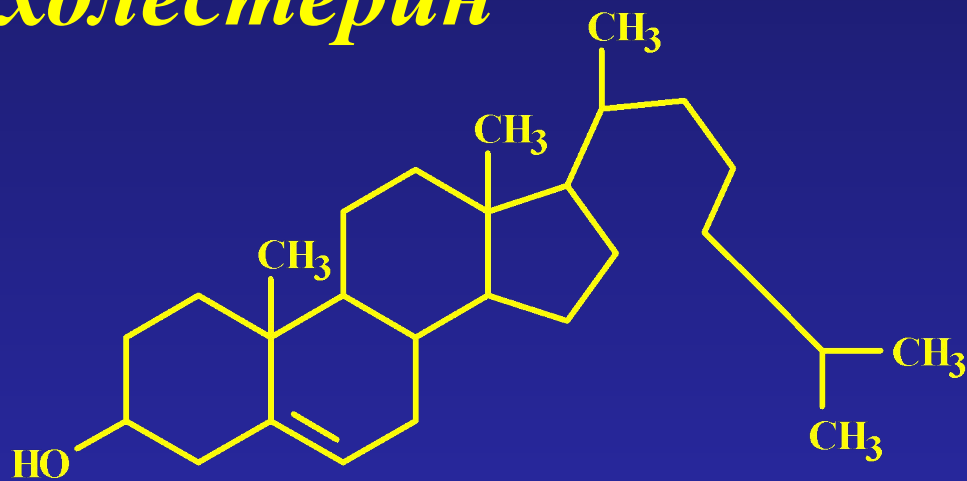


ГОНАН

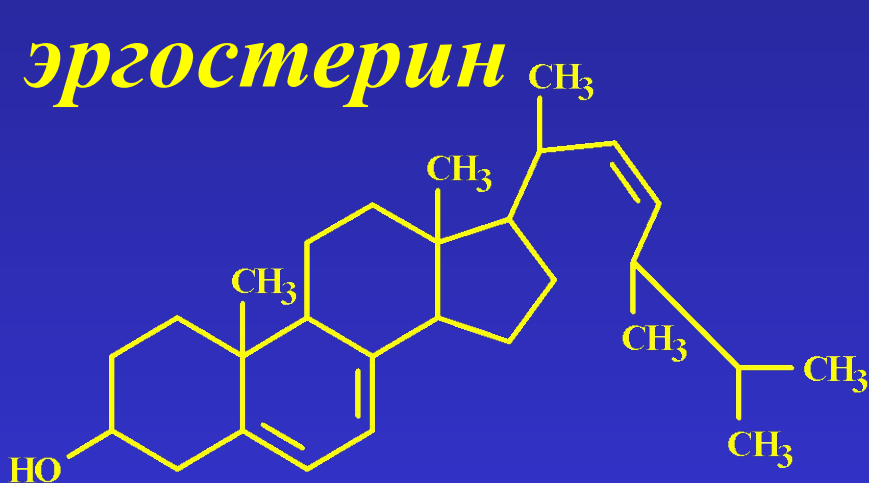




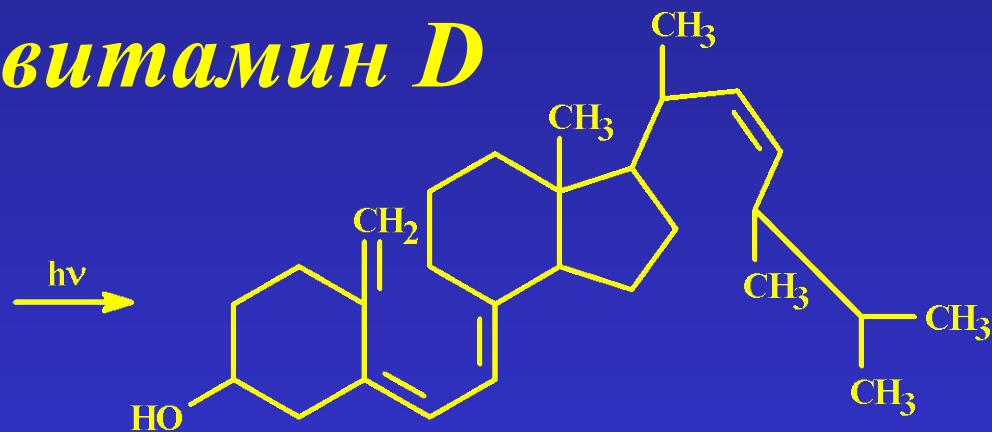
холестерин



эргостерин



витамин D





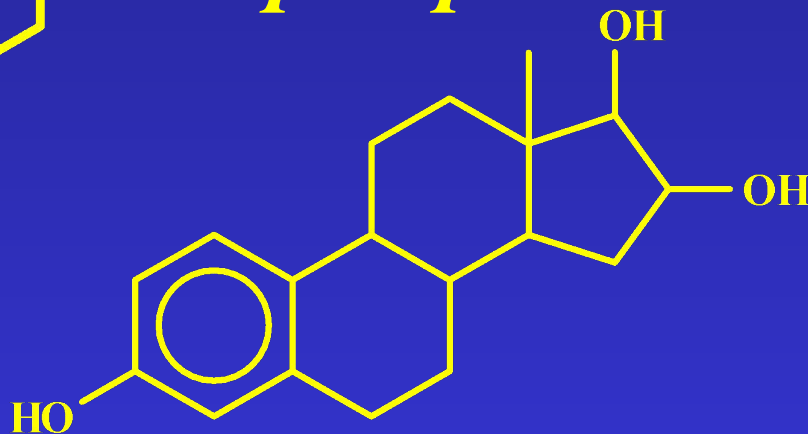
эстрон



эстрадиол

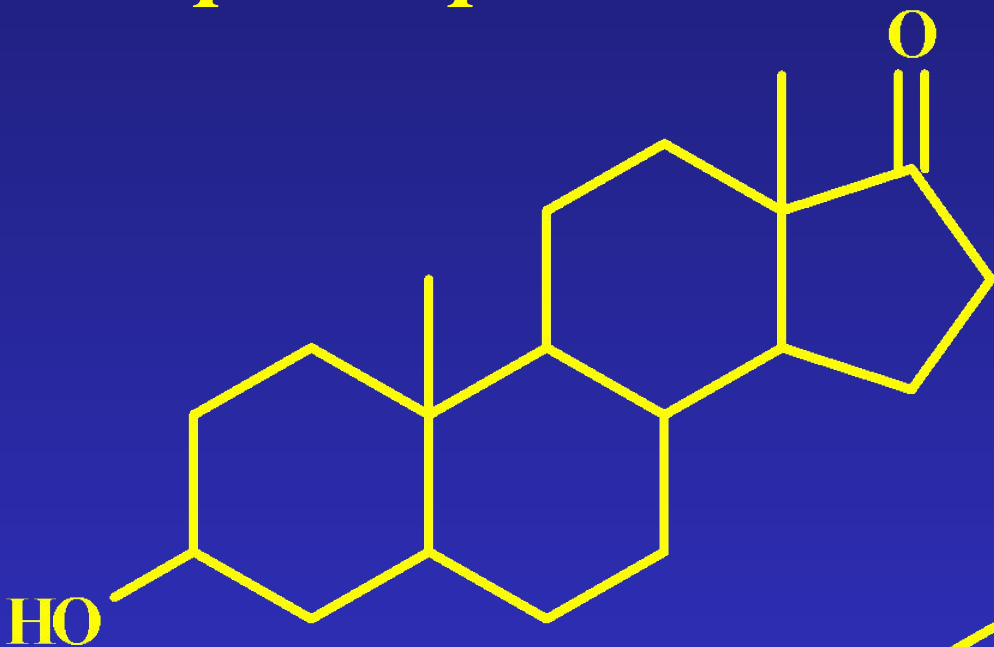


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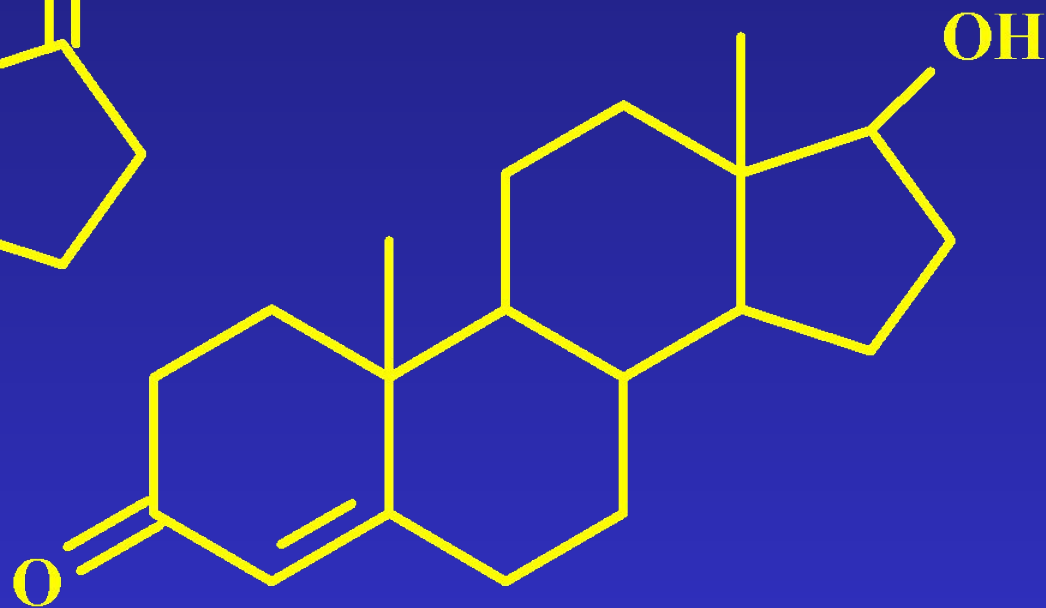


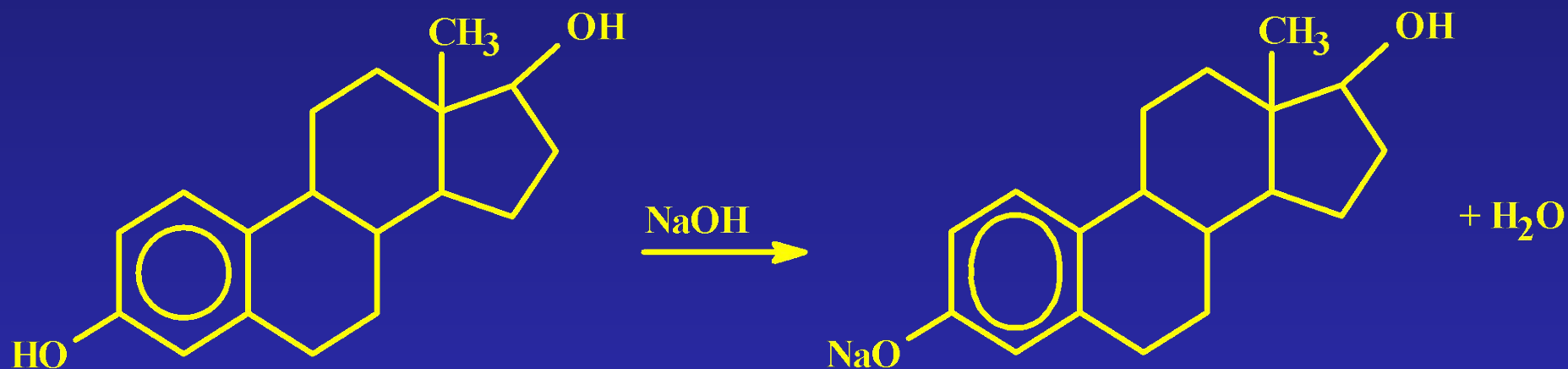


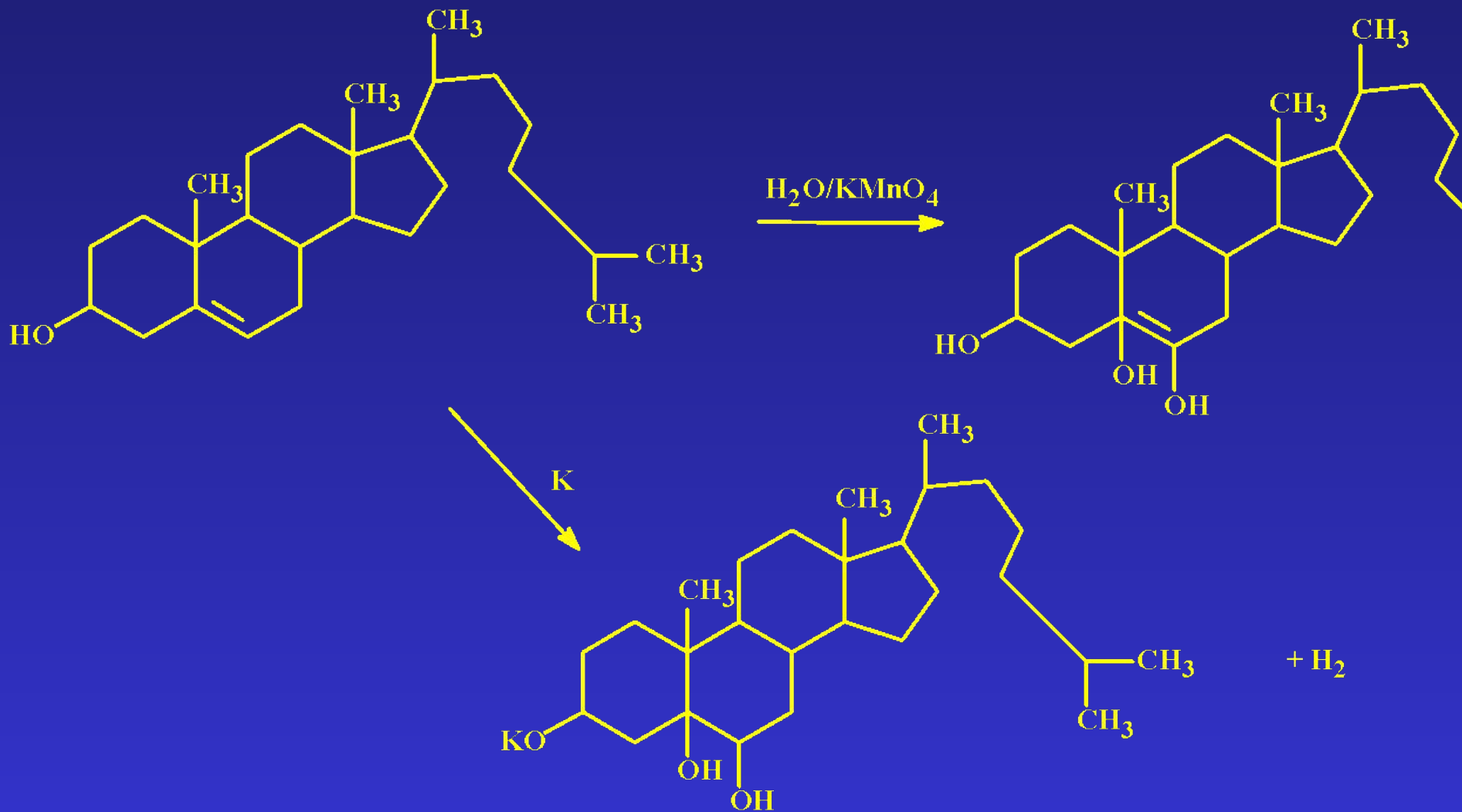
андростерон

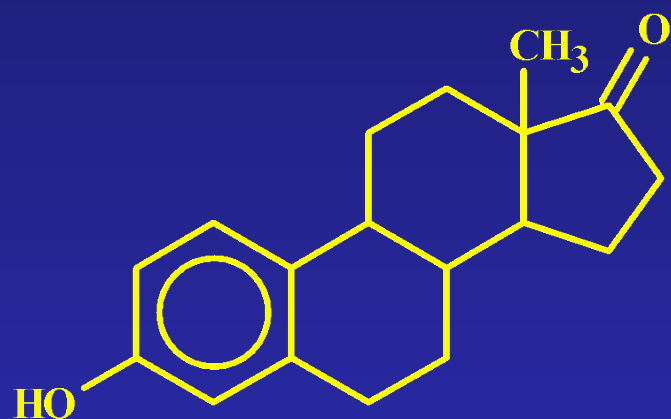


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