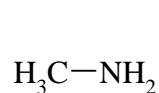
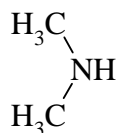


9.01

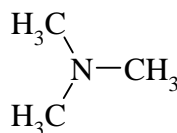
Aliphatische Amine



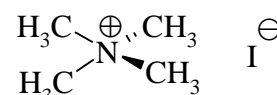
Methylamin



Dimethylamin



Trimethylamin

Tetramethyl-
ammoniumiodidSiedepunkt
[°C]

- 6

7

3

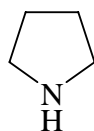
fest, Zersetz. > 230 °C

pK_a = 10 – 11 (der entsprechenden Ammonium-Ionen)

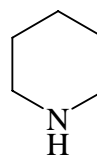
Cyclische Amine (das Stickstoffatom ist Teil eines Rings)



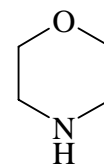
Aziridin



Pyrrolidin



Piperidin



Morpholin

Siedepunkt
[°C]

57

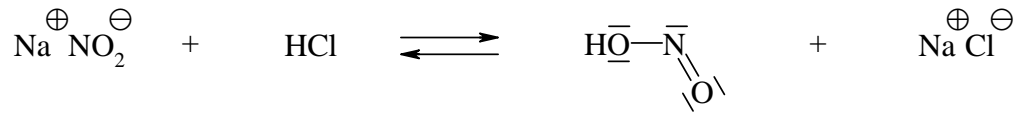
89

106

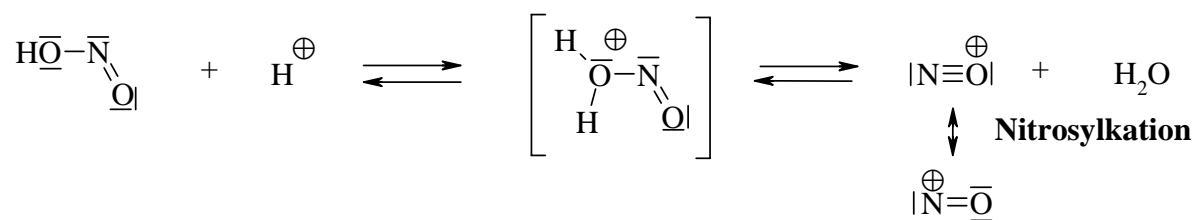
129

Reaktionen von Aminen mit salpetriger Säure

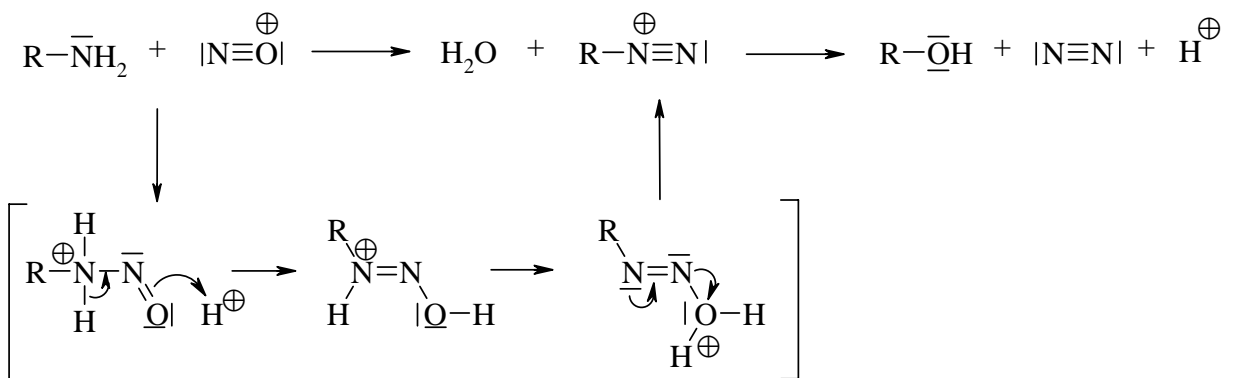
Erzeugung von **salpetriger Säure**



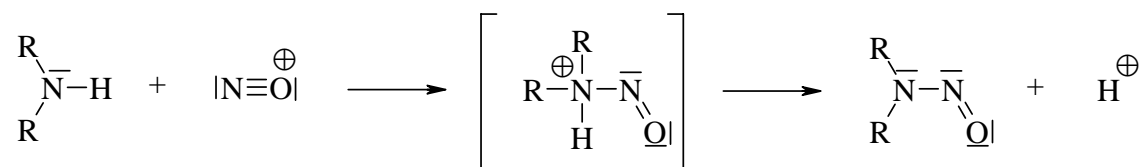
Erzeugung des **Nitrosylkations** aus salpetriger Säure



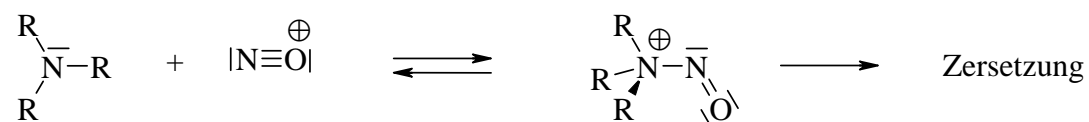
Reaktion des Nitrosylkations mit einem **primären Amin** zum **Diazoniumion**



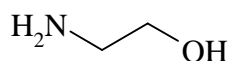
Reaktion des Nitrosylkations mit einem **sekundären Amin** zum **Nitrosamin** (karzinogen)



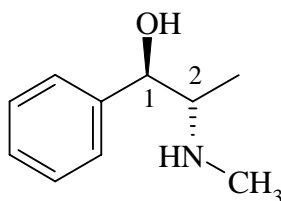
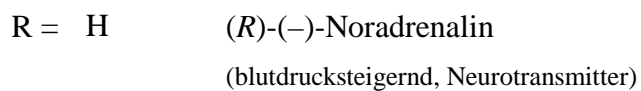
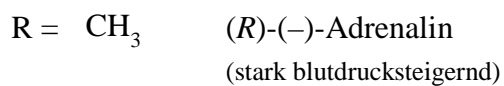
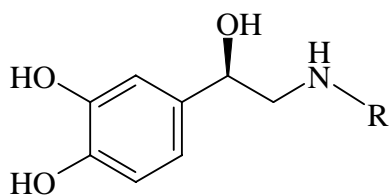
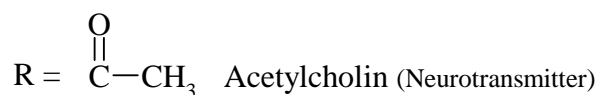
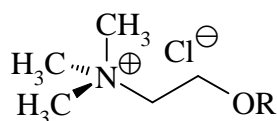
Reversible Reaktion des Nitrosylkations mit einem **tertiären Amin**



Natürlich vorkommende Aminoalkohole und Derivate

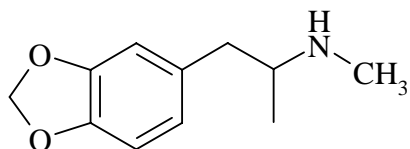


Ethanolamin



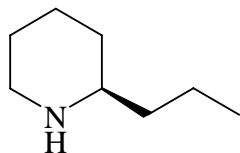
$$(1R,2S)\text{-}(-)\text{-Ephedrin}$$

(blutdrucksteigernd)

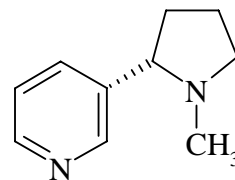


$$3,4\text{-Methylenedioxy-}N\text{-methyl-amphetamin}$$

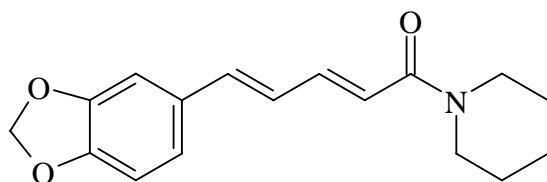
(Appetitzügler, Rauschgift "Ecstasy")

(Natürlich) vorkommende Amine (Alkaloide) und Derivate

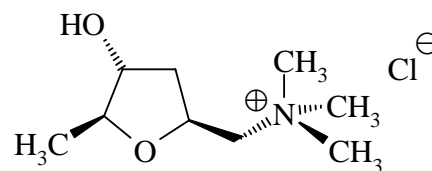
(R)-(+)-Coniin
(gefleckter Schierling)



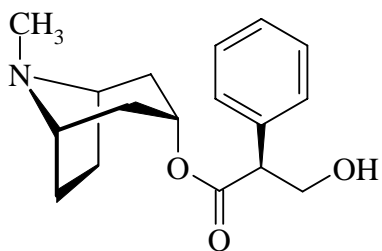
(S)-(-)-Nicotin
 $LD_{50} = 50 \text{ mg/kg Ratte, oral}$
 $MAK = 0.5 \text{ mg/m}^3$



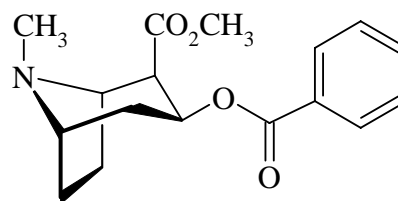
Piperin
(schwarzer Pfeffer)



(+)-Muscarin
(rote Haut des Fliegenpilzes)



(S)-(-)-Hyoscyamin
(Tollkirsche, Stechapfel, Bilsenkraut)
Racemisches Gemisch = Atropin



(-)-Cocain