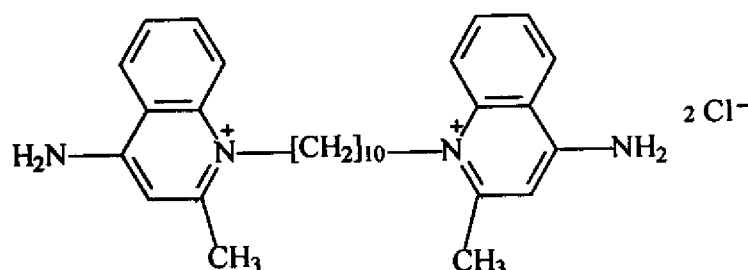


## 1. Introduction

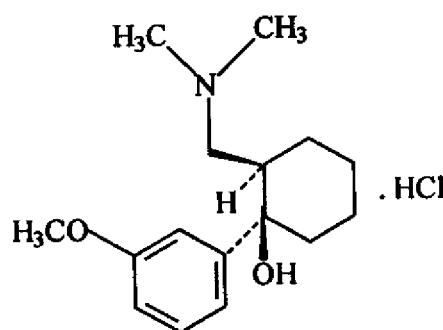
### 1. 1. knowledge of the studied drugs

#### 1. 1. 1. Dequalinium chloride



Dequalinium chloride is N,N-decamethylenebis(4-amino-2-methylquinolinium chloride [ $C_{30}H_{40}Cl_2N_4$  with M.Wt. = 527.6]. Dequalinium chloride is a bisquaternary quinolinium antiseptic, bactericidal against many Gram-positive and Gram-negative bacteria, and effective against fungi. It is mainly used in the form of lozenges in the treatment of minor infections of the mouth and throat. It has been applied topically in the treatment of skin and vaginal infections.

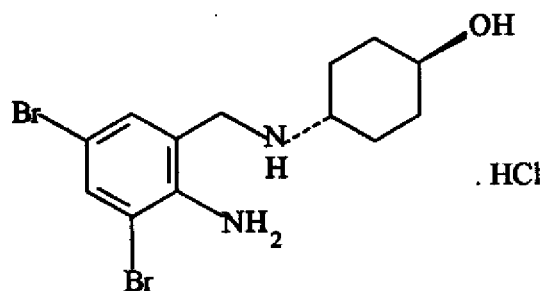
#### 1. 1. 2. Tramadol hydrochloride



Tramadol hydrochloride is (±)-trans-2-dimethylamino-methyl-1-(3-methoxy phenyl) cyclohexanol hydrochloride [ $C_{16}H_{25}NO_2 \cdot HCl$  with

M. Wt = 299.83]. Tramadol hydrochloride is an opioid analgesic. It also has noradrenergic and serotonergic properties that may contribute to its analgesic activity. Tramadol is used for moderate to severe pain. Tramadol hydrochloride is given by mouth, intravenously or rectally as suppository. The intermuscular route has also been used. It may also be given by infusion or as part of a patientcontrolled analgesia system. Usual doses by mouth are 50 to 100 mg every 4.0 to 6.0 hours. Tramadol hydrochloride may also be given orally as modified-release preparations once or twice daily. The total daily dosage by mouth should not exceed 400 mg. An injection of tramadol hydrochloride 50 mg per ml is reported to be incompatible with injections of diazepam, diclofenac sodium, indomethacin, midazolam, and piroxicam if mixed in the same syringe. Tramadol hydrochloride is readily absorbed following oral administration but is subject to first-pass metabolism. Tramadol is metabolized by N- and O-demethylation and glucuronidation or sulfation in the liver. The metabolite O-desmethyltramadol is pharmacologically active. Tramadol is widely distributed, crosses the placenta, and appears in small amounts in breast milk. The elimination half-life following oral administration is about 6.0 hours.

### 1. 1. 3. Ambroxol hydrochloride



Ambroxol hydrochloride is trans-4-(2-amino-3,5-dibromobenzylamino)