Moxifloxacin Hydrochloride

Introduction

Moxifloxacin hydrochloride is a crystalline powder which is soluble in DMSO (dimethyl sulfoxide) and dimethyl formamide. Moxifloxacin hydrochloride is an 8-methoxy-fluoroquinone compound with broad-spectrum bactericidal activity against gram-positive strains (including Corynebacterium species, Micrococcus luteus, Staphylococcus aureus, Staphylococcus epidermidis, Staphylococcus haemolyticus, Staphylococcus hominis, Staphylococcus warneri, Streptococcus pneumoniae, and Streptococcus viridans group) and gram-negative strains (Acinetobacter lwoffii, Haemophilus influenzae, and Haemophilus parainfluenzae). And it is effective for the treatment of respiratory tract infections including acute exacerbations of chronic bronchitis, community-acquired pneumonia, and acute bacterial sinusitis. It is also indicated for the treatment of uncomplicated skin and skin structure infections. The structure of moxifloxacin hydrochloride is showed in figure 1.

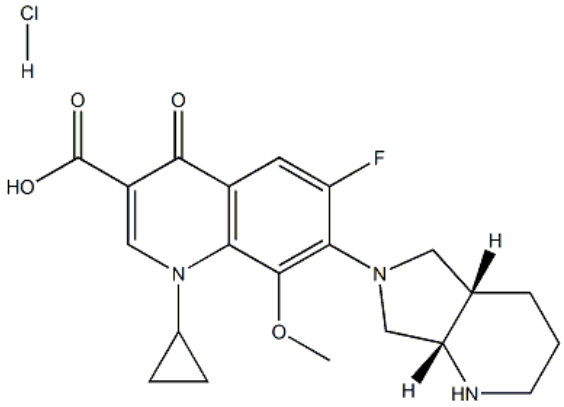

Fig. 1 Structure of moxifloxacin hydrochloride

Application in the treatment of respiratory tract infection

Moxifloxacin hydrochloride, with broad-spectrum bactericidal activity against gram strains, is commonly used in the treatment of respiratory tract infection, including acute sinusitis, acute attack of chronic bronchitis, community acquired pneumonia, *etc*.

- **Introduction of respiratory tract infection**

  Respiratory tract infections (RTIs) are often spread in the coughs and sneezes of someone with an infection which are usually grouped into upper and lower respiratory tract infections. An upper respiratory infection affects the upper part of your respiratory system, including your sinuses and throat. Upper respiratory infection symptoms include a runny nose, sore throat and cough. While a lower respiratory tract infection occurs when there is an infection of the lungs, specifically in the lower airways.

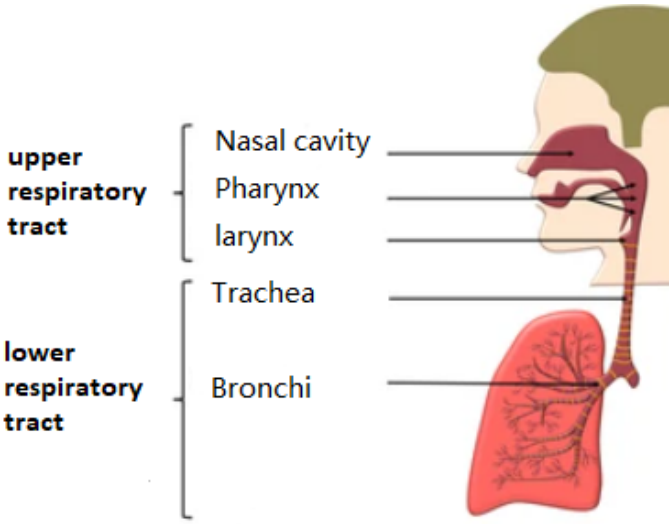

Fig. 2 Respiratory tract infection (RTI)

- **Mechanism of action**

  Enzyme topoisomerase II (DNA gyrase) is an essential enzyme that is involved in the replication, transcription and repair of bacterial DNA. Topoisomerase IV is an enzyme known to play a key role in the partitioning of the chromosomal DNA during bacterial cell division. The bactericidal action of moxifloxacin hydrochloride results from inhibition of the DNA gyrase and topoisomerase IV.

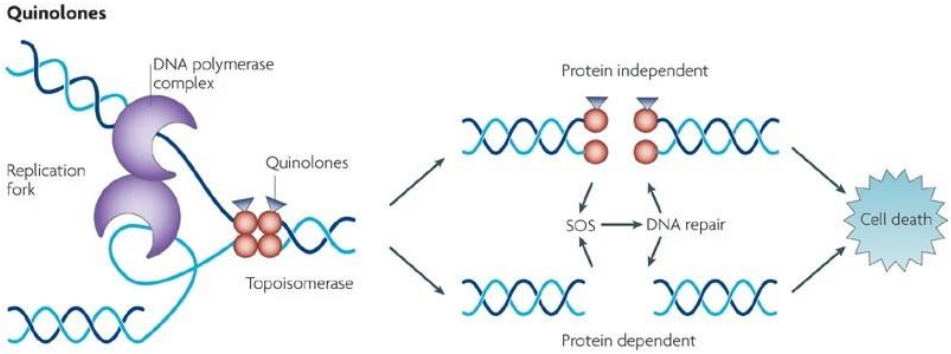

Fig. 3 Mechanism of DNA synthesis inhibitor[1]

- **Side effects**

  Moxifloxacin hydrochloride comes as a tablet you take by mouth and as an ophthalmic solution (eye drop). It's also available as an intravenous (IV) drug, which is only given by a healthcare provider. Like all medicines, moxifloxacin hydrochloride can cause side effects, although not everyone gets them.

  Common side effects

- nausea
- stomach pain
- constipation
- vomiting
- diarrhea
- heartburn

  Serious side effects

- severe diarrhea
- hives
- peeling or blistering of the skin
- difficulty breathing or swallowing
- yellowing of the skin or eyes; pale skin; dark urine; or light colored stool
- fainting or loss of consciousness
- rash
- itching
- fever
- hoarseness or throat tightness
- swelling of the eyes, face, mouth, lips, tongue, throat, hands, feet, ankles, or lower legs
- decreased urination

  Moxifloxacin hydrochloride may cause problems with bones, joints, and tissues around joints in children. It should not be given to children younger than 18 years old. Moxifloxacin hydrochloride may cause other side effects. Call your doctor if you have any unusual problems while you are taking this medication. Alfa Chemistry offers high quality of moxifloxacin hydrochloride. Please feel free to contact us for APIs or technical services.

Reference

1. Michael A. Kohanski, Daniel J. Dwyer & James J. Collins. How antibiotics kill bacteria: from targets to networks. Nature Reviews Microbiology volume 8, pages423–435 (2010).
2. https://www.alfa-api.com/products/moxifloxacin-hydrochloride.html