Ciprofloxacin
PRODUCT DATA SHEET

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Product Name:	Ciprofloxacin
Product Number:	C031
CAS Number:	85721-33-1
Molecular Formula:	$C_{17}H_{18}FN_3O_3$
Molecular Weight:	331.34 g/mol
Form:	Powder
Appearance:	White or light yellow crystalline powder
Solubility:	sparingly soluble in aqueous solution (1.1 µg/mL)
Source:	Synthetic
Storage Conditions:	2-8 °C, protect from light
Description:	Ciprofloxacin is a broad-spectrum second generation 4-fluoroquinolone antibiotic that targets the bacterial enzyme DNA gyrase and is effective against Gram-positive and Gram-negative bacteria and *Mycoplasmas.* Ciprofloxacin is sparingly soluble in aqueous solution (1.1 µg/mL). TOKU-E offers two forms of Ciprofloxacin: • Ciprofloxacin (C031) • Ciprofloxacin hydrochloride (C032)
Mechanism of Action:	Fluoroquinolone antibiotics target bacterial DNA gyrase (topoisomerase type II), an enzyme which reduces DNA strain during replication and is essential for DNA packaging, transcription, and replication. Thus, DNA synthesis and cell division is inhibited.
Spectrum:	Ciprofloxacin is a broad spectrum antibiotic targeting a wide variety of Gram-positive and Gram-negative bacteria. It is also effective against Mycoplasmas.
Microbiology Applications	Ciprofloxacin is commonly used in clinical *in vitro* microbiological antimicrobial susceptibility tests (panels, discs, and MIC strips) against Gram-positive and Gram-negative microbial isolates. Medical microbiologists use AST results to recommend antibiotic treatment options for infected patients. • For a complete list of Ciprofloxacin MIC values, click here.
Plant Biology Applications	Garlic protoplasts were cultured in medium containing Ciprofloxacin, and the compound was successful at preventing microbial growth and was not toxic to the protoplasts. (Fellner, 1995)

Cancer Applications

Two transitional cell carcinoma cell lines, MBT□2 and T24, were used in an *in vitro* study of the effects of Ciprofloxacin on cell proliferation, and the compound was found to inhibit cell proliferation in a dose-dependent manner (Ebisuno et al, 1997).

When cells become malignant, they often lose their primary cilium, a microtubule-based sensory organelle. Thus, the potential to restore the cilium is being investigated as a therapeutic approach to attenuate tumor growth in cancer research. Commonly used chemotherapeutic drugs like Cefprozil can restore ciliogenesis, and thus they are referred to as ciliogenic drugs. Using pancreatic cancer cell lines CFPAC-1 and PANC-1, researchers found a causative link between secreted ATP and cilia induction via an autocrine/paracrine loop involving extracellular ATP-purinergic receptor signaling pathway (Khan et al, 2017).

References:

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