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PHA302

 ANSWERS

**Tetracyclines:**

Tetracyclines have the broadest spectrum of antimicrobial activity. These may include: Aureomycin, Terramycin, and Panmycin.

Four fused 6-membered rings, as shown in the figure below, form the basic structure from which the various tetracyclines are made. The various derivatives are different at one or more of four sites on the rigid, planar ring structure. The classical tetracyclines were derived from Streptomyces spp., but the newer derivatives are semisynthetic as is generally true for newer members of other drug groups.

**Mechanism of Action:**

Tetracyclines inhibit bacterial protein synthesis by blocking the attachment of the transfer RNA-amino acid to the ribosome. More precisely they are inhibitors of the codon-anticodon interaction. Tetracyclines can also inhibit protein synthesis in the host, but are less likely to reach the concentration required because eukaryotic cells do not have a tetracycline uptake mechanism.

Indication for use

[Tetracycline](https://www.webmd.com/drugs/2/drug-5919/tetracycline%2Boral/details) is used to treat a wide variety of infections, including [acne](https://www.webmd.com/skin-problems-and-treatments/acne/default.htm). It is an antibiotic that works by stopping the growth of bacteria.

This antibiotic treats only [bacterial infections](https://www.webmd.com/a-to-z-guides/bacterial-and-viral-infections). It will not work for [viral infections](https://www.webmd.com/a-to-z-guides/bacterial-and-viral-infections) (such as [common cold](https://www.webmd.com/cold-and-flu/default.htm), [flu](https://www.webmd.com/cold-and-flu/default.htm)). Using any antibiotic when it is not needed can cause it to not work for future infections.

Tetracycline can also be used in combination with anti-ulcer [medications](https://www.webmd.com/drugs/index-drugs.aspx) to treat certain types of [stomach](https://www.webmd.com/digestive-disorders/picture-of-the-stomach) ulcers.

**Adverse effects**

[Nausea](https://www.webmd.com/digestive-disorders/digestive-diseases-nausea-vomiting), [vomiting](https://www.webmd.com/digestive-disorders/digestive-diseases-nausea-vomiting), [diarrhea](https://www.webmd.com/digestive-disorders/digestive-diseases-diarrhea), loss of appetite, [mouth](https://www.webmd.com/oral-health/anatomy-of-the-mouth) sores, [black hairy tongue](https://www.webmd.com/oral-health/guide/black-hairy-tongue), [sore throat](https://www.webmd.com/cold-and-flu/understanding-sore-throat-basics), [dizziness](https://www.webmd.com/first-aid/understanding-dizziness-basics), [headache](https://www.webmd.com/migraines-headaches/migraines-headaches-basics), or rectal discomfort may occur.

Nail discoloration, [muscle pain](https://www.webmd.com/pain-management/guide/myofascial-pain-syndrome), difficult or painful swallowing, signs of [kidney](https://www.webmd.com/kidney-stones/picture-of-the-kidneys) problems (such as change in the amount of urine), brown/gray [tooth discoloration](https://www.webmd.com/oral-health/features/foods-stain-teeth-feature), numbness/tingling of the hands/feet, unusual [fatigue](https://www.webmd.com/women/guide/why-so-tired-10-causes-fatigue), new signs of infection (e.g., persistent [sore throat](https://www.webmd.com/cold-and-flu/treat-symptoms-12/video-how-to-soothe-sore-throat), fever, chills), hearing changes (e.g., [ringing in the ears](https://www.webmd.com/a-to-z-guides/understanding-tinnitus-basics), decreased hearing), easy bruising/bleeding, severe [stomach](https://www.webmd.com/digestive-disorders/picture-of-the-stomach)/[abdominal pain](https://www.webmd.com/pain-management/guide/abdominal-pain-causes-treatments), yellowing [eyes](https://www.webmd.com/eye-health/picture-of-the-eyes)/[skin](https://www.webmd.com/skin-problems-and-treatments/skin-conditions-faq), [dark urine](https://www.webmd.com/a-to-z-guides/brown-urine-causes).

**Toxicity**

Acute **toxicity of tetracycline** is relatively low. At higher oral doses **tetracycline** may produce gastrointestinal irritation, with nausea, vomiting, and diarrhea, as well as renal failure. Bone and teeth discoloration are known to occur in humans under clinical treatment with high levels of **tetracycline**.