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[Home](#) | [Treatments](#)

Tetracycline

Tetracyclines are oral antibiotics often used to treat skin diseases. There has been over 50 years' experience with these medications, which were originally derived from soil bacteria *Streptomyces aureofaciens*.

The original base medicine 'tetracycline' is no longer available in New Zealand but its derivatives (doxycycline, lymecycline and minocycline) are readily available on prescription.

What are they used for?

Tetracyclines are broad spectrum antibiotics often used to treat skin, chest, urethral and pelvic infections.

They are also prescribed for [acne](#), [rosacea](#) and [perioral dermatitis](#). Other skin conditions that may improve with tetracyclines include:

- [Hidradenitis suppurativa](#)
- Blistering diseases such as [bullous pemphigoid](#)
- [Sarcoidosis](#)
- [Pyoderma gangrenosum](#)
- [Sweet disease](#)
- [Pityriasis lichenoides chronica](#)

Tetracyclines suppress but do not cure these conditions. Therefore these antibiotics may need to be continued for weeks, months or longer until the disease runs its course.

How do they work?

The antibiotics act at the ribosomal level where they interfere with the protein synthesis of susceptible bacteria. They also have nonantibiotic properties, which are not well understood. These nonantibiotic properties include:

- Anti-inflammatory effects
- Inhibition of metalloproteinases (enzymes that inhibit collagen and gelatin production)
- Reduce new blood vessel formation (angiogenesis)
- Reduce programmed cell death (apoptosis)

Dosage

Treatment of bacterial infection is generally for one to two weeks, but tetracyclines may be taken for longer if required.

Patients differ in the amount of tetracycline they need to control inflammatory skin diseases. A full daily dose of tetracycline is generally prescribed for the first few weeks or months to see how well it controls the skin problem. This full dose should be continued for most patients with acne. However, those with rosacea and perioral dermatitis may be able to reduce their dose at approximately monthly intervals.

- Tetracycline: 250–500mg four times daily
- Oxytetracycline: 250–500mg four times daily
- Demeclocycline: 150–300mg twice daily

- Doxycycline: 50–100mg once or twice daily
- Lymecycline: 300–600mg once or twice daily
- Minocycline: 50–100mg once or twice daily

There's a lag period of one to three weeks between the change in dosage and its effect on skin. If the skin problem becomes worse, return to the previous higher dosage and continue on it or as advised by your doctor.

Precautions

Tetracycline should be stored in a cool place out of direct sunlight. Outdated capsules or tablets should not be taken as they may cause kidney damage.

Tetracycline must not be taken by pregnant or breast-feeding women, or by children under twelve years, because it discolours growing teeth and may cause enamel hypoplasia (malformed permanent teeth). It can stain permanent teeth but this effect is usually temporary.

The base medication, tetracycline, should be taken with a glass of water on an empty stomach, half an hour before, or two hours after meals. This is because food prevents absorption of tetracycline into the bloodstream. Some people find this inconvenient, and others get indigestion unless it is taken with food. Minocycline and doxycycline are not affected by food and can be taken at mealtime. The water is very important to prevent ulceration of the oesophagus. Tetracyclines should not be taken at the same time as antacids and iron. If required, these can be taken at another time of day however.

Allergy is uncommon; it results in various types of skin rash, and rarely, liver disease. Tetracyclines may cause tummy upsets (nausea, vomiting, diarrhoea). Minocycline may occasionally cause severe headaches (raised intracranial hypertension) and has been reported to precipitate arthritis and [systemic lupus erythematosus](#), especially in young women. Minocycline is also very rarely associated with potentially fatal severe drug hypersensitivity syndrome, in which there is prolonged rash, fever, swollen lymph glands and internal organ failure (liver, lungs, heart, kidneys).

There is concern that longterm use of broad spectrum antibiotics may result in the appearance of resistant bacteria, which may be transferred to patients suffering potentially serious infections. Therefore, they are best avoided where other treatments are effective or the health concern is trivial.

Tetracycline may make the skin more sensitive to sunlight ([photosensitivity](#)); this effect depends on the variety of tetracycline and the amount taken. It is most likely with doxycycline and least likely with minocycline. If unexpected [sunburn](#) does occur, take the medication in the evening and avoid excessive sun exposure.

Because of fewer bacteria in the vagina, in women, tetracycline occasionally produces [thrush](#), an overgrowth of candida yeasts. This results in genital inflammation, irritation and discharge. [Oral thrush](#) is less common. The antibiotics can usually be continued with appropriate treatment of the thrush with over-the-counter or prescribed vaginal [antifungal cream](#), or if necessary, [oral agents](#).

Effect on contraceptives

There is little evidence that tetracyclines reduce the efficacy of the oral contraceptive pill unless they cause gastrointestinal upset. However, to be absolutely safe, extra precautions should be taken, particularly in the first four weeks of starting the antibiotics. Discuss this with your doctor.

If you develop side affects, advise your doctor. You may need to stop taking tetracycline or change brand.

Related information

On DermNet NZ:

- [Acne](#)
- [Rosacea](#)
- [Perioral dermatitis](#)

Other websites:

- [Medsafe](#): consumer information on doxycycline

Books about skin diseases:

See the [DermNet NZ bookstore](#)

DermNet does not provide an on-line consultation service.

If you have any concerns with your skin or its treatment, see a [dermatologist](#) for advice.

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