Table. Comparison of Doxycycline and Minocycline [18-20,37-44]

Characteristics	Doxycycline	Minocycline
How supplied	**Doxycycline monohydrate** Tablets: 50 mg, 75 mg, 100 mg, 150 mg Capsules: 50 mg, 100 mg, 150 mg Capsule extended- release: 40 mg Suspension: 25 mg/5 mL **Doxycycline hyclate** Tablets: 20 mg, 100 mg Delayed release tablets: 75 mg, 100 mg, 150 mg Capsules: 50 mg, 100 mg Injection: 100 mg **Doxycycline Calcium** Syrup: 50 mg/5 mL	**Minocycline hydrochloride** Tablets: 50 mg, 75 mg, 100 mg Capsules: 50 mg, 75 mg, 100 mg Extended release tablets: 45 mg, 90 mg, 135 mg Solodyn extended release tablets: 55 mg, 65 mg, 80 mg, 105 mg, 115 mg Subgingival: 1 mg Injection: 100 mg
Bioavailability	90% to 100%	90% to 100%
Time to peak	1.5 to 4 hours	1.5 to 4 hours
Half-life	15 to 24 hours	11 to 22 hours
Protein binding	82% - 93%	76%
Metabolism	Liver	Liver
Elimination	Kidney: 20% to 30% Feces: 70% to 80%	Kidney: 10% to 13% Feces: 19%
Tissue Penetration	Doxycycline is 5 times more lipophilic than tetracycline	Minocycline is 5 times more lipophilic than doxycycline. Minocycline achieves highest penetration into saliva and cerebrospinal fluid compared to doxycycline and tetracycline.
Dosage	Dosage depends on indication for use.	Dosage depends on indication for use.
Adverse reactions	Doxycycline may be associated with more GI upset than minocycline. GI upset may vary with doxycycline formulation.	Minocycline may be associated with more vestibular, autoimmune, hepatic and hypersensitivity reactions than doxycycline.
Common Adverse Drug Reactions	Frequency not given in labeling or tertiary references. • Gastrointestinal distress (dyspepsia, anorexia, nausea, dysphagia) • Glossitis • Skin rashes • Photosensitivity • Vaginal candidiasis Note: only the Oracea product labeling reports incidence of adverse reactions and that is for doxycycline 40 mg daily. The following reactions occurred at > 2% and more than placebo with Oracea: Diarrhea 5%, nasopharyngitis 5%, sinusitis 3%, and hypertension 3%.	• Gastrointestinal distress (dyspepsia, anorexia, nausea, dysphagia) • Arthralgia (1%) • Myalgia (1%) • Headache (23%) • Dizziness (9%) • Vertigo (1%) • Tinnitus (2%) • Urticaria (2%) • Pruritus (5%) • Malaise (4%) • Somnolence (2%) • Fatigue (9%) • Fever • Skin rashes • Photosensitivity • Vaginal candidiasis
Serious Adverse Drug Reactions	• Benign intracranial hypertension • Exfoliative dermatitis, • Hypersensitivity reactions • Lupus-like syndrome	• Benign intracranial hypertension • Exfoliative dermatitis • Hypersensitivity reactions • Lupus-like syndrome

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	• Blood dyscrasias • Hepatotoxicity • Esophageal ulceration • Pseudomembranous colitis	• Blood dyscrasias • Hepatotoxicity • Esophageal ulceration • Pseudomembranous colitis • Hyperpigmentation
Warnings	• Tooth discoloration in forming teeth • Do not use in pregnancy • Photosensitivity – dependent on dose, UVA intensity, and skin type • Potential overgrowth of nonsusceptible organisms including fungi • Pseudomembranous colitis and *Clostridium difficile* associated diarrhea • Benign intracranial hypertension, pseudotumor cerebri • Autoimmune syndromes- tetracyclines have been associated with autoimmune syndromes • Tissue hyperpigmentation • Development of drug resistant bacteria	• Tooth discoloration in forming teeth • Do not use in pregnancy • Decrease dose in renal impairment • Photosensitivity – dependent on dose, UVA intensity, and skin type • CNS effects like vertigo, dizziness or light-headedness can occur – use caution with driving and operating hazardous equipment • Potential overgrowth of nonsusceptible organisms • Pseudomembranous colitis and *C. difficile* infection • Hepatotoxicity • Benign intracranial hypertension, pseudotumor cerebri • Autoimmune syndromes – minocycline is associated with drug induced lupus like syndrome, autoimmune hepatitis and vasculitis. • Hypersensitivity reactions including DRESS syndrome • Tissue hyperpigmentation • Development of drug resistant bacteria
Labeled Indication Adult Patients, Based on Product Labeling for Oral Doxycycline and Minocycline	• Acne • In patients with penicillin allergy, treatment of uncomplicated gonorrhea from *Neisseria gonorrhoeae*, Syphilis from *Treponema pallidum*, Yaws from *Treponema pertenue*, Listeriosis from *Listeria monocytogenes*, Vincent's infection from *Fusobacterium fusiforme*, Actinomycosis from *Actinomyces Israelii*, and infections from *Clostridium* species • Adjunct treatment of amebic dysentery • Anthrax due to *Bacillus anthracis*, including post-exposure treatment. • Bacterial infection caused by: *Chlamydia trachomatis*, *C. psittaci*, *Borrelia recurrentis, Haemophilus ducreyi, Yersinia pestis, Francisella tularensis, Vibrio cholerae, Campylobacter fetus, Brucella* species, *Bartonella bacilliformis, Calymmatobacterium granulomatis, Escherichia coli, Enterobacter*	• Acne • In patients with penicillin allergy, treatment of *Neisseria gonorrhoeae*, Syphilis from *Treponema pallidum*, Yaws from *Treponema pertenue*, Listeriosis from *Listeria monocytogenes*, Vincent's infection from *Fusobacterium fusiforme*, Actinomycosis from *Actinomyces Israelii*, and infections from *Clostridium* species • Adjunct treatment of amebic dysentery • Anthrax treatment in patients with penicillin contraindication • Bacterial infection caused by: *Chlamydia trachomatis, Chlamydia psittaci, Borrelia recurrentis, Haemophilus ducreyi, Yersinia pestis, Francisella tularensis, Vibrio cholerae, Campylobacter fetus, Brucella* species*, Bartonella bacilliformis, Calymmatobacterium granulomatis, Escherichia coli, Enterobacter aerogenes, Shigella* species*, Acinetobacter* species. • Rickettsial disease • Skin and skin structure infections from *S.*

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Characteristics	Doxycycline	Minocycline
	aerogenes, Shigella species, *Acinetobacter* species. • Rickettsial disease • Respiratory tract infection caused by *Mycoplasma pneumoniae, Streptococcus pneumoniae, Haemophilus influenzae* and *Klebsiella* species • Treatment of rosacea in adult patients (Oracea®) • Skin and skin structure infections from *S. aureus*. However, not drug of choice for any type of staphylococcal infection. • Urethritis from *Ureaplasma urealyticum* infection (non-gonococcal) • Urinary tract infection from *Klebsiella* species • Prophylaxis of *Plasmodium falciparum*	*aureus*. However, not drug of choice for any type of staphylococcal infection. • Treatment of asymptomatic carriers of *Neisseria meningitidis*. • Adjunct treatment of periodontitis (Arestin®) • Respiratory tract infection caused by *Mycoplasma pneumoniae, Streptococcus pneumoniae, Haemophilus influenzae* and *Klebsiella* species • Uncomplicated *Ureaplasma urealyticum* infection • Urinary tract infection from *Klebsiella* species