

Drug-Induced Photosensitivity

Drug-induced photosensitivity reactions can vary in presentation and are usually either phototoxic or photoallergic, although it is often not possible to determine which.^{1,3} **Photoallergy** is a rare, immunological response, which is not dose-related and occurs after repeat exposure to a drug. Photoallergy occurs when light causes a drug to act as a hapten, triggering a hypersensitivity response which often manifests as a pruritic and eczematous rash.^{1,4-6} **Phototoxic** reactions are chemically induced reactions which occur when the drug absorbs UVA light and causes cellular damage. This reaction can be seen with initial exposure to a drug, may be dose-dependent, and doesn't demonstrate cross-sensitivity. It usually has rapid onset and manifests as an exaggerated sunburn. This reaction will be seen only on skin areas exposed to the sun.^{1,4-6} The best way to manage drug-induced photosensitivity is prevention. Patients taking these drugs should be counseled to minimize sun exposure and to use broad-spectrum sunscreens when sun exposure cannot be avoided. We have a patient education handout to help patients choose and use sunscreens correctly, *Staying Safe in the Sun*. When appropriate, taking a medication at bedtime instead of in the morning may be useful as a preventive strategy.² If a reaction does occur, the offending agent should typically be stopped (if not possible, lowering the dose may help) and a topical or oral corticosteroid can be used for treatment.^{1,3} It may take weeks to months for reactions to fade.⁷

The following table lists drugs that have been associated with photosensitivity. Reactions can be difficult to predict. The most common reported medication classes to cause photosensitivity are antimicrobials, NSAIDs, and cardiovascular drugs. *It is important to note that many of the drugs listed were included based on information from case reports. Due to factors such as underreporting, it is not possible to estimate the true incidence of photosensitivity with individual agents.^{1,3} As such, this table may not be all-inclusive. **Drugs that are considered more potent photosensitizers are indicated in bold type.**^{1,4}*

| Drug Class | Specific Agents ^a | | Comments |
|--------------------|---|--|---|
| ANTIBIOTICS | | | |
| Fluoroquinolones | <ul style="list-style-type: none"> • ciprofloxacin • levofloxacin • moxifloxacin | <ul style="list-style-type: none"> • nalidixic acid • ofloxacin | <ul style="list-style-type: none"> • Fluoroquinolones seem to cause reactions to varying degrees, dependent on their chemical structure. For example, ciprofloxacin and levofloxacin appear to have less risk of photosensitivity.⁷ • The reaction with fluoroquinolones may present as a sunburn or as increased skin fragility and blistering.^{3,7} |

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| Drug Class | Specific Agents ^a | | Comments |
|--|---|---|--|
| ANTIBIOTICS, continued | | | |
| Tetracyclines | <ul style="list-style-type: none"> • demeclocycline • doxycycline • tetracycline | | <ul style="list-style-type: none"> • Reaction with doxycycline is dose-dependent.^{1,7} • Minocycline is not typically considered to be a significant cause of photosensitivity.^{1,7} |
| Other Antibiotics | <ul style="list-style-type: none"> • ceftazidime • cefotaxime • dapsone • gentamicin • isoniazid | <ul style="list-style-type: none"> • nitrofurantoin • pyrazinamide • sulfamethoxazole • sulfisoxazole • trimethoprim | <ul style="list-style-type: none"> • Sulfonamides are associated with photosensitivity in 5% to 10% of treated patients.⁸ |
| ANTICONVULSANTS | <ul style="list-style-type: none"> • carbamazepine • lamotrigine | <ul style="list-style-type: none"> • phenobarbital • phenytoin | <ul style="list-style-type: none"> • None |
| ANTIDEPRESSANTS | | | |
| Tricyclics ^{1,4} | <ul style="list-style-type: none"> • amitriptyline • amoxapine • clomipramine • desipramine • doxepin | <ul style="list-style-type: none"> • imipramine • nortriptyline • protriptyline • trimipramine | <ul style="list-style-type: none"> • None |
| Selective Serotonin Reuptake Inhibitors (SSRIs) ¹ | <ul style="list-style-type: none"> • citalopram • escitalopram • fluoxetine | <ul style="list-style-type: none"> • fluvoxamine • paroxetine • sertraline | <ul style="list-style-type: none"> • SSRIs are not considered to be potent photosensitizers.¹ |
| Other Antidepressants ^{1,2,11} | <ul style="list-style-type: none"> • mirtazapine • phenelzine • venlafaxine | | <ul style="list-style-type: none"> • Some antidepressants within the same classes (e.g., the serotonin noradrenaline reuptake inhibitors [SNRIs] duloxetine and desvenlafaxine) do not appear to cause photosensitivity.⁷ |
| ANTIFUNGALS ^{1,4,7} | <ul style="list-style-type: none"> • griseofulvin • itraconazole • ketoconazole • terbinafine • voriconazole | | <ul style="list-style-type: none"> • Voriconazole may increase the risk of melanoma and non-melanoma skin cancers.³ • Reports of reactions with voriconazole typically involve long-term use.¹ • Fluconazole has not been reported to cause photosensitivity.¹ |

More . . .

| Drug Class | Specific Agents ^a | | Comments |
|---------------------------------------|--|--|--|
| ANTIHISTAMINES ^{1,4} | <ul style="list-style-type: none"> • cyproheptadine • brompheniramine | <ul style="list-style-type: none"> • diphenhydramine • promethazine | <ul style="list-style-type: none"> • Reactions have been seen with both topical and systemic administration of antihistamines. |
| ANTIMALARIALS ^{1,7} | <ul style="list-style-type: none"> • atovaquone/proguanil • chloroquine • hydroxychloroquine • mefloquine | <ul style="list-style-type: none"> • pyrimethamine • quinidine • quinine | <ul style="list-style-type: none"> • None |
| ANTIPLATELETS ¹ | <ul style="list-style-type: none"> • Clopidogrel | | <ul style="list-style-type: none"> • None |
| ANTIPSYCHOTICS | | | |
| Phenothiazines ^{1,4} | <ul style="list-style-type: none"> • chlorpromazine • fluphenazine • perphenazine • prochlorperazine | <ul style="list-style-type: none"> • promethazine • thioridazine • trifluoperazine | <ul style="list-style-type: none"> • Chlorpromazine is one of the most frequently reported drugs associated with phototoxicity.⁹ |
| Other Antipsychotics ¹ | <ul style="list-style-type: none"> • aripiprazole • clozapine • haloperidol | <ul style="list-style-type: none"> • olanzapine • risperidone • thiothixene | <ul style="list-style-type: none"> • Atypical antipsychotic drugs appear to be less photosensitizing than phenothiazines.⁷ |
| ANTIRETROVIRALS ^{1,7} | <ul style="list-style-type: none"> • efavirenz • tenofovir | | <ul style="list-style-type: none"> • Photosensitive reactions can occur in patients with HIV in the absence of medications, making it difficult to associate photosensitivity with HIV medications.⁷ |
| CARDIOVASCULAR AGENTS | | | |
| Antihypertensives ^{1,4,7} | <ul style="list-style-type: none"> • amlodipine • captopril • diltiazem • enalapril • fosinopril • hydralazine | <ul style="list-style-type: none"> • methyl dopa • nifedipine • olmesartan • quinapril • ramipril • valsartan | <ul style="list-style-type: none"> • None |

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| Drug Class | Specific Agents ^a | | Comments |
|---|---|---|---|
| CARDIOVASCULAR AGENTS , continued | | | |
| Statins ^{1,4} | <ul style="list-style-type: none"> • atorvastatin • pravastatin | <ul style="list-style-type: none"> • simvastatin | <ul style="list-style-type: none"> • Photosensitivity is not a common reaction of statins.⁷ |
| Other Cardiovascular Agents ^{1,4} | <ul style="list-style-type: none"> • amiodarone • disopyramide • fenofibrate • quinidine | | <ul style="list-style-type: none"> • Incidence with amiodarone of 10% to 50% has been seen.^{1,2} Phototoxicity has rarely been reported with dronedarone.^{11,12} • Reactions with amiodarone may take months to resolve after discontinuation of the drug.¹ The reaction can present as prickling or burning during exposure to UV radiation, immediate erythema, edema or urticaria with higher doses, and possibly delayed erythema, hyperpigmentation, or blue-grey pigmentation.^{3,7} |
| CHEMOTHERAPY AGENTS ^{1,4} | <ul style="list-style-type: none"> • bicalutamide • capecitabine • crizotinib • dacarbazine • epirubicin • fluorouracil • flutamide • hydroxyurea | <ul style="list-style-type: none"> • imatinib • methotrexate • paclitaxel • procarbazine • vandetanib • vemurafenib • vinblastine | <ul style="list-style-type: none"> • Capecitabine (fluorouracil prodrug) may be less photosensitizing than fluorouracil. Capecitabine may be a possible alternative for patients not able to tolerate photosensitivity reactions with fluorouracil.⁷ • Vincristine is an analog of vinblastine; however, it does not appear to cause photosensitivity.⁷ • Vemurafenib causes photosensitivity reactions in 35% to 65% of patients.⁷ |
| DIETARY SUPPLEMENTS AND VITAMINS ¹⁰ | <ul style="list-style-type: none"> • bergamot • bitter orange • chlorella • dong quai | <ul style="list-style-type: none"> • gossypol • haronga • St. John's wort • vitamin B6 (pyridoxine) | <ul style="list-style-type: none"> • Limited reporting of adverse reactions with supplements makes this listing incomplete. • Citrus fruits (e.g., bergamot, lemon, lime) contain psoralens which can cause photosensitivity reactions with topical use or exposure.^{10,14} • Also see our <i>Natural Medicines</i> chart (in the "Tools" section) for more sensitizers. |

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| DIURETICS | | | |
| Thiazides ^{1,4} | <ul style="list-style-type: none"> • chlorthalidone • chlorothiazide • hydrochlorothiazide | <ul style="list-style-type: none"> • methyclothiazide • metolazone | <ul style="list-style-type: none"> • The reaction with thiazide diuretics may present as dermatitis or a sunburn-type reaction.³ |
| Other Diuretics ^{1,4} | <ul style="list-style-type: none"> • acetazolamide • amiloride • ethacrynic acid | <ul style="list-style-type: none"> • furosemide • spironolactone • triamterene | <ul style="list-style-type: none"> • Furosemide reactions typically include bullous eruptions.⁷ |
| HORMONAL AGENTS^{1,4} | <ul style="list-style-type: none"> • ethinyl estradiol • corticosteroids | | <ul style="list-style-type: none"> • Photosensitivity has been reported with both oral and topical (patch) ethinyl estradiol contraceptives.⁷ |
| HYPOGLYCEMIC AGENTS^{1,4} | <ul style="list-style-type: none"> • chlorpropamide • gliclazide • glimepiride • glipizide | <ul style="list-style-type: none"> • glyburide • metformin • tolazamide • tolbutamide | <ul style="list-style-type: none"> • None |
| IMMUNOSUPPRESSANTS⁴ | <ul style="list-style-type: none"> • azathioprine | | <ul style="list-style-type: none"> • Immunosuppressive therapy with azathioprine is associated with an increased risk of skin cancer in patients with kidney transplants.⁴ |
| MISCELLANEOUS⁷ | <ul style="list-style-type: none"> • esomeprazole • pantoprazole • pirfenidone • ranitidine | | <ul style="list-style-type: none"> • A case of esomeprazole photosensitivity resolved on discontinuation of the drug and did not recur when ranitidine was initiated.⁷ |
| NSAIDs^{1,4} | <ul style="list-style-type: none"> • celecoxib • diclofenac • diflunisal • etodolac • indomethacin • ketoprofen | <ul style="list-style-type: none"> • mefenamic acid • nabumetone • naproxen • oxaprozin • piroxicam • sulindac | <ul style="list-style-type: none"> • NSAIDs seem to cause reactions to varying degrees.¹ • The reaction with NSAIDs can include increased skin fragility and blistering.³ • Ibuprofen is not considered a potent photosensitizer, with only rare case reports of reactions.⁷ |

More . . .

| Drug Class | Specific Agents ^a | | Comments |
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| RETINOIDS, oral | <ul style="list-style-type: none"> • etretinate | | <ul style="list-style-type: none"> • There is controversy concerning whether or not oral retinoids cause photosensitivity. Etretinate does seem to cause photosensitivity, with a reaction of increased susceptibility to sunburn. Isotretinoin does not seem to cause photosensitivity.^{1,2} |
| RHEUMATOID ARTHRITIS TREATMENTS^{1,4} | <ul style="list-style-type: none"> • gold salts • leflunomide | <ul style="list-style-type: none"> • methotrexate • sulfasalazine | <ul style="list-style-type: none"> • None |
| SEDATIVES⁴ | <ul style="list-style-type: none"> • alprazolam • chlordiazepoxide | | <ul style="list-style-type: none"> • Alprazolam has been reported to cause pruritic erythema on sun-exposed skin.⁷ |
| TOPICAL AGENTS⁴ | <ul style="list-style-type: none"> • aminolevulinic acid • coal tar • fluorouracil • hexachlorophene | <ul style="list-style-type: none"> • methoxsalen • psoralens • tazarotene • tretinoin | <ul style="list-style-type: none"> • Data are conflicting regarding whether benzoyl peroxide causes photosensitivity, but it should be used with a sunscreen since sunlight may worsen skin irritation.¹³ |

- a.** It is important to note that many of the drugs listed in this chart were included based on information from case reports. Due to factors such as underreporting, it is not possible to estimate the true incidence of photosensitivity with individual agents.^{1,3} As such, this table may not be all-inclusive.

Users of this resource are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication.

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