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# **Drug Interactions Results**

Drug interactions for the following 15 drug(s):

# Drug List: Chemokazi

doxycycline
lisinopril
oxaliplatin
oxycodone
Ativan (lorazepam)
Celebrex (celecoxib)
Compazine (prochlorperazine)
Daily Multi-Vitamins with Minerals (multivitamin with minerals)
Effexor XR (venlafaxine)
Marinol (dronabinol)
OxyContin (oxycodone)
Protonix (pantoprazole)
Pyridium (phenazopyridine)
Vectibix (panitumumab)
Zofran (ondansetron)

# Interactions between your selected drugs

 $\textbf{lisinopril} \leftrightarrow \textbf{celecoxib}$ 

Applies to: lisinopril, Celebrex (celecoxib)

MONITOR: Nonsteroidal anti-inflammatory drugs (NSAIDs) may attenuate the antihypertensive effects of ACE drugs.com/interactions-check.php?drug... 1/8

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inhibitors. The proposed mechanism is NSAID-induced inhibition of renal prostaglandin synthesis, which results in unopposed pressor activity producing hypertension. In addition, NSAIDs can cause fluid retention, which also affects blood pressure. Some NSAIDs may also alter the pharmacokinetics of certain ACE inhibitors. For example, oxaprozin has been shown to reduce the systemic exposure (AUC) of enalapril and its active metabolite, enalaprilat.

MONITOR: Concomitant use of NSAIDs and ACE inhibitors may increase the risk of renal impairment, particularly in volume-depleted patients. Chronic use of NSAIDs alone may be associated with renal toxicities, including elevations in serum creatinine and BUN, tubular necrosis, glomerulitis, renal papillary necrosis, acute interstitial nephritis, nephrotic syndrome, and renal failure. Additionally, in patients with prerenal conditions whose renal perfusion may be dependent on the function of prostaglandins, NSAIDs may precipitate overt renal decompensation via a dose-related inhibition of prostaglandin synthesis. ACE inhibitors can further worsen renal function by blocking the effect of angiotensin II-mediated efferent arteriolar vasoconstriction, thereby decreasing glomerular filtration.

MANAGEMENT: Patients receiving ACE inhibitors who require prolonged (greater than 1 week) concomitant therapy with an NSAID should have blood pressure monitored more closely following initiation, discontinuation, or change of dosage of the NSAID. Renal function should also be evaluated periodically during prolonged coadministration. The interaction is not expected to occur with low doses (e.g., low-dose aspirin) or intermittent short-term administration of NSAIDs.

### doxycycline \leftrightarrow multivitamin with minerals

Applies to: doxycycline, Daily Multi-Vitamins with Minerals (multivitamin with minerals)

GENERALLY AVOID: The bioavailability of oral tetracyclines and iron salts may be significantly decreased during concurrent administration. Therapeutic failure may result. The proposed mechanism is chelation of tetracyclines by the iron cation, forming an insoluble complex that is poorly absorbed from the gastrointestinal tract. In ten healthy volunteers, simultaneous oral administration of ferrous sulfate 200 mg and single doses of various tetracyclines (200 mg to 500 mg) resulted in reductions in the serum levels of methacycline and doxycycline by 80% to 90%, oxytetracycline by 50% to 60%, and tetracycline by 40% to 50%. In another study, 300 mg of ferrous sulfate reduced the absorption of tetracycline by 81% and that of minocycline by 77%. Conversely, the absorption of iron has been shown to be decreased by up to 78% in healthy subjects and up to 65% in patients with iron depletion when ferrous sulfate 250 mg was administered with tetracycline 500 mg. Available data suggest that administration of iron 3 hours before or 2 hours after a tetracycline largely prevents the interaction with most tetracyclines except doxycycline. Due to extensive enterohepatic cycling, iron binding may occur with doxycycline even when it is given parenterally. It has also been shown that when iron is administered up to 11 hours after doxycycline, serum concentrations of doxycycline may still be reduced by 20% to 45%.

MANAGEMENT: Coadministration of a tetracycline with any iron-containing product should be avoided if possible. Otherwise, patients should be advised to stagger the times of administration by at least three hours, although separating the doses may not prevent the interaction with doxycycline.

#### lorazepam ↔ oxycodone

Applies to: Ativan (lorazepam), OxyContin (oxycodone), oxycodone

MONITOR: Central nervous system- and/or respiratory-depressant effects may be additively or synergistically increased in patients taking multiple drugs that cause these effects, especially in elderly or debilitated patients.

MANAGEMENT: During concomitant use of these drugs, patients should be monitored for potentially excessive or prolonged CNS and respiratory depression. Ambulatory patients should be counseled to avoid hazardous activities requiring mental alertness and motor coordination until they know how these agents affect them, and to notify their physician if they experience excessive or prolonged CNS effects that interfere with their normal activities.

#### lorazepam \leftrightarrow prochlorperazine

Applies to: Ativan (lorazepam), Compazine (prochlorperazine)

MONITOR: Central nervous system- and/or respiratory-depressant effects may be additively or synergistically increased in patients taking multiple drugs that cause these effects, especially in elderly or debilitated patients.

MANAGEMENT: During concomitant use of these drugs, patients should be monitored for potentially excessive or prolonged CNS and respiratory depression. Ambulatory patients should be counseled to avoid hazardous activities requiring mental alertness and motor coordination until they know how these agents affect them, and to notify their physician if they experience excessive or prolonged CNS effects that interfere with their normal activities.

# $oxycodone \leftrightarrow prochlorperazine$

Applies to: OxyContin (oxycodone), oxycodone, Compazine (prochlorperazine)

MONITOR: Central nervous system- and/or respiratory-depressant effects may be additively or synergistically increased in patients taking multiple drugs that cause these effects, especially in elderly or debilitated patients.

MANAGEMENT: During concomitant use of these drugs, patients should be monitored for potentially excessive or prolonged CNS and respiratory depression. Ambulatory patients should be counseled to avoid hazardous activities requiring mental alertness and motor coordination until they know how these agents affect them, and to notify their physician if they experience excessive or prolonged CNS effects that interfere with their normal activities.

# lorazepam ↔ dronabinol

Applies to: Ativan (lorazepam), Marinol (dronabinol)

MONITOR: Central nervous system- and/or respiratory-depressant effects may be additively or synergistically increased in patients taking multiple drugs that cause these effects, especially in elderly or debilitated patients.

MANAGEMENT: During concomitant use of these drugs, patients should be monitored for potentially excessive or prolonged CNS and respiratory depression. Ambulatory patients should be counseled to avoid hazardous activities requiring mental alertness and motor coordination until they know how these agents affect them, and to notify their physician if they experience excessive or prolonged CNS effects that interfere with their normal activities.

# oxycodone \leftrightarrow dronabinol

Applies to: OxyContin (oxycodone), oxycodone, Marinol (dronabinol)

MONITOR: Central nervous system- and/or respiratory-depressant effects may be additively or synergistically increased in patients taking multiple drugs that cause these effects, especially in elderly or debilitated patients.

MANAGEMENT: During concomitant use of these drugs, patients should be monitored for potentially excessive or prolonged CNS and respiratory depression. Ambulatory patients should be counseled to avoid hazardous activities requiring mental alertness and motor coordination until they know how these agents affect them, and to notify their physician if they experience excessive or prolonged CNS effects that interfere with their normal activities.

# $lorazepam \leftrightarrow venlafaxine$

Applies to: Ativan (lorazepam), Effexor XR (venlafaxine)

MONITOR: Central nervous system- and/or respiratory-depressant effects may be additively or synergistically increased in patients taking multiple drugs that cause these effects, especially in elderly or debilitated patients.

MANAGEMENT: During concomitant use of these drugs, patients should be monitored for potentially excessive or prolonged CNS and respiratory depression. Ambulatory patients should be counseled to avoid hazardous activities requiring mental alertness and motor coordination until they know how these agents affect them, and to notify their physician if they experience excessive or prolonged CNS effects that interfere with their normal activities.

### prochlorperazine ↔ venlafaxine

Applies to: Compazine (prochlorperazine), Effexor XR (venlafaxine)

MONITOR: Central nervous system- and/or respiratory-depressant effects may be additively or synergistically increased in patients taking multiple drugs that cause these effects, especially in elderly or debilitated patients.

MANAGEMENT: During concomitant use of these drugs, patients should be monitored for potentially excessive or prolonged CNS and respiratory depression. Ambulatory patients should be counseled to avoid hazardous activities requiring mental alertness and motor coordination until they know how these agents affect them, and to notify their physician if they experience excessive or prolonged CNS effects that interfere with their normal activities.

#### dronabinol ↔ venlafaxine

Applies to: Marinol (dronabinol), Effexor XR (venlafaxine)

MONITOR: Central nervous system- and/or respiratory-depressant effects may be additively or synergistically increased in patients taking multiple drugs that cause these effects, especially in elderly or debilitated patients.

MANAGEMENT: During concomitant use of these drugs, patients should be monitored for potentially excessive or prolonged CNS and respiratory depression. Ambulatory patients should be counseled to avoid hazardous activities requiring mental alertness and motor coordination until they know how these agents affect them, and to notify their physician if they experience excessive or prolonged CNS effects that interfere with their normal activities.

#### prochlorperazine ↔ lisinopril

Applies to: Compazine (prochlorperazine), lisinopril

MONITOR: Phenothiazines and neuroleptic agents may potentiate the hypotensive effect of some medications secondary to their peripheral alpha-1 adrenergic blocking activity. Orthostatic hypotension and syncope associated with vasodilation may occur, particularly during initial dosing and/or parenteral administration of the phenothiazine or neuroleptic.

MANAGEMENT: Close clinical monitoring for development of hypotension is recommended if phenothiazines or neuroleptic agents are used in patients receiving antihypertensive medications or vasodilators. A lower starting dosage and slower titration of the phenothiazine or neuroleptic may be appropriate, especially in the elderly. Patients should be advised to avoid rising abruptly from a sitting or recumbent position and to notify their physician if they experience dizziness, lightheadedness, syncope, orthostasis, or tachycardia. Patients should also avoid driving or operating hazardous machinery until they know how the medications affect them.

# $oxycodone \leftrightarrow celecoxib$

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Applies to: OxyContin (oxycodone), oxycodone, Celebrex (celecoxib)

MONITOR: Coadministration with celecoxib may increase the plasma concentrations of drugs that are substrates of the CYP450 2D6 isoenzyme. The mechanism is decreased clearance due to inhibition of CYP450 2D6 activity by celecoxib.

MANAGEMENT: Caution is advised if celecoxib must be used concurrently with medications that undergo metabolism by CYP450 2D6, particularly those with a narrow therapeutic range. Dosage adjustments as well as clinical and laboratory monitoring may be appropriate for some drugs whenever celecoxib is added to or withdrawn from therapy.

#### prochlorperazine ↔ celecoxib

Applies to: Compazine (prochlorperazine), Celebrex (celecoxib)

MONITOR: Coadministration with celecoxib may increase the plasma concentrations of drugs that are substrates of the CYP450 2D6 isoenzyme. The mechanism is decreased clearance due to inhibition of CYP450 2D6 activity by celecoxib.

MANAGEMENT: Caution is advised if celecoxib must be used concurrently with medications that undergo metabolism by CYP450 2D6, particularly those with a narrow therapeutic range. Dosage adjustments as well as clinical and laboratory monitoring may be appropriate for some drugs whenever celecoxib is added to or withdrawn from therapy.

#### ondansetron ↔ celecoxib

Applies to: Zofran (ondansetron), Celebrex (celecoxib)

MONITOR: Coadministration with celecoxib may increase the plasma concentrations of drugs that are substrates of the CYP450 2D6 isoenzyme. The mechanism is decreased clearance due to inhibition of CYP450 2D6 activity by celecoxib.

MANAGEMENT: Caution is advised if celecoxib must be used concurrently with medications that undergo metabolism by CYP450 2D6, particularly those with a narrow therapeutic range. Dosage adjustments as well as clinical and laboratory monitoring may be appropriate for some drugs whenever celecoxib is added to or withdrawn from therapy.

venlafaxine ↔ celecoxib

Applies to: Effexor XR (venlafaxine), Celebrex (celecoxib)

MONITOR: Coadministration with celecoxib may increase the plasma concentrations of drugs that are substrates of the CYP450 2D6 isoenzyme. The mechanism is decreased clearance due to inhibition of CYP450 2D6 activity by celecoxib.

MANAGEMENT: Caution is advised if celecoxib must be used concurrently with medications that undergo metabolism by CYP450 2D6, particularly those with a narrow therapeutic range. Dosage adjustments as well as clinical and laboratory monitoring may be appropriate for some drugs whenever celecoxib is added to or withdrawn from therapy.

celecoxib ↔ oxaliplatin

Applies to: Celebrex (celecoxib), oxaliplatin

MONITOR: Theoretically, coadministration with drugs that are nephrotoxic may delay and/or decrease the clearance of oxaliplatin, which is primarily eliminated unchanged by the kidney. However, formal studies have not been conducted.

MANAGEMENT: Caution is advised if oxaliplatin is used in patients who have recently received or are receiving treatment with potentially nephrotoxic drugs (e.g., aminoglycosides; polypeptide, glycopeptide, and polymyxin antibiotics; amphotericin B; adefovir; cidofovir; tenofovir; foscarnet; cisplatin; deferasirox; gallium nitrate; lithium; mesalamine; certain immunosuppressants; intravenous bisphosphonates; intravenous pentamidine; high intravenous dosages of methotrexate; high dosages and/or chronic use of nonsteroidal anti-inflammatory agents). The potential for increased toxicity of oxaliplatin such as peripheral sensory neuropathies and neutropenia should be considered. Renal function should be closely monitored during therapy.

## prochlorperazine <-> ondansetron

#### Applies to: Compazine (prochlorperazine), Zofran (ondansetron)

MONITOR: Theoretically, concurrent use of two or more drugs that can cause QT interval prolongation may increase the risk of ventricular arrhythmias, including ventricular tachycardia and torsades de pointes, due to additive arrhythmogenic potential related to their effects on cardiac conduction. The risk of an individual agent or a combination of these agents causing ventricular arrhythmia in association with QT prolongation is largely unpredictable but may be increased by certain underlying risk factors such as congenital long QT syndrome, cardiac disease, and electrolyte disturbances (e.g., hypokalemia, hypomagnesemia). In addition, the extent of drug-induced QT prolongation is dependent on the particular drug(s) involved and dosage(s) of the drug(s).

MANAGEMENT: Caution and clinical monitoring are recommended if multiple agents associated with QT interval prolongation are prescribed together. Patients should be advised to seek medical attention if they experience symptoms that could indicate the occurrence of torsades de pointes such as dizziness, palpitations, or syncope.

### lorazepam ↔ lisinopril

Applies to: Ativan (lorazepam), lisinopril

MONITOR: Many psychotherapeutic and CNS-active agents (e.g., anxiolytics, sedatives, hypnotics, antidepressants, antipsychotics, opioids, alcohol, muscle relaxants) exhibit hypotensive effects, especially during initiation of therapy and dose escalation. Coadministration with antihypertensive agents, in particular vasodilators and alpha-blockers, may result in additive effects on blood pressure and orthostasis.

MANAGEMENT: Caution is advised during coadministration of these agents. Close monitoring for development of hypotension is recommended. Patients should be advised to avoid rising abruptly from a sitting or recumbent position and to notify their physician if they experience dizziness, lightheadedness, syncope, orthostasis, or tachycardia.

### oxycodone ↔ lisinopril

Applies to: OxyContin (oxycodone), oxycodone, lisinopril

MONITOR: Many psychotherapeutic and CNS-active agents (e.g., anxiolytics, sedatives, hypnotics, antidepressants, antipsychotics, opioids, alcohol, muscle relaxants) exhibit hypotensive effects, especially during initiation of therapy and dose escalation. Coadministration with antihypertensive agents, in particular vasodilators and alpha-blockers, may result in additive effects on blood pressure and orthostasis.

MANAGEMENT: Caution is advised during coadministration of these agents. Close monitoring for development of hypotension is recommended. Patients should be advised to avoid rising abruptly from a sitting or recumbent position and to notify their physician if they experience dizziness, lightheadedness, syncope, orthostasis, or tachycardia.

# lisinopril \leftrightarrow venlafaxine

Applies to: lisinopril, Effexor XR (venlafaxine)

MONITOR: Many psychotherapeutic and CNS-active agents (e.g., anxiolytics, sedatives, hypnotics, antidepressants, antipsychotics, opioids, alcohol, muscle relaxants) exhibit hypotensive effects, especially during initiation of therapy and dose escalation. Coadministration with antihypertensive agents, in particular vasodilators and alpha-blockers, may result in additive effects on blood pressure and orthostasis.

MANAGEMENT: Caution is advised during coadministration of these agents. Close monitoring for development of hypotension is recommended. Patients should be advised to avoid rising abruptly from a sitting or recumbent position and to notify their physician if they experience dizziness, lightheadedness, syncope, orthostasis, or tachycardia.

#### oxycodone ↔ venlafaxine

Applies to: OxyContin (oxycodone), oxycodone, Effexor XR (venlafaxine)

MONITOR: Coadministration of oxycodone with serotonin reuptake inhibitors has been associated with development of the serotonin syndrome. The mechanism of interaction is unknown. Unlike other analgesics such as phenylpiperidine opioids (e.g., meperidine) and tramadol, oxycodone is not known to possess serotonergic activity and has not previously been associated with the serotonin syndrome. The report describes a bone marrow transplant patient who developed severe tremors and visual hallucinations after he dramatically increased his dosage of oxycodone while on a stable dosage of sertraline and cyclosporine. Discontinuation of cyclosporine did not completely resolve his hallucinations and had no effect on the tremors after 72 hours, which led to consideration of a possible sertraline-oxycodone interaction. The patient's symptoms resolved after sertraline was withheld and cyproheptadine (a central serotonin antagonist) administered. Serotonin syndrome is a rare but serious and potentially fatal condition thought to result from hyperstimulation of brainstem 5-HT1A and 2A receptors. Symptoms of the serotonin syndrome may include mental status changes such as irritability, altered consciousness, confusion, hallucinations, and coma; autonomic dysfunction such as tachycardia, hyperthermia, diaphoresis, shivering, blood pressure lability, and mydriasis; neuromuscular abnormalities such as hyperreflexia, myoclonus, tremor, rigidity, and ataxia; and gastrointestinal symptoms such as abdominal cramping, nausea, vomiting, and diarrhea.

MANAGEMENT: Until more data are available, caution is advised if oxycodone is prescribed in combination with serotonin reuptake inhibitors, particularly in complicated patients such as transplant patients who are also receiving cyclosporine. Patients should be monitored for symptoms of the serotonin syndrome during treatment. Particular caution is advised when increasing the dosages of these agents. If serotonin syndrome develops or is suspected during the course of therapy, all serotonergic agents should be discontinued immediately and supportive care rendered as necessary. Moderately ill patients may also benefit from the administration of a serotonin antagonist (e.g., cyproheptadine, chlorpromazine). Severe cases should be managed under consultation with a toxicologist and may require sedation, neuromuscular paralysis, intubation, and mechanical ventilation in addition to the other measures. Patients should also be advised of potentially additive central nervous system effects from these agents and to avoid hazardous activities requiring complete mental alertness and motor coordination until they know how these agents affect them.

# No other interactions were found between your selected drugs.

Note: this does not necessarily mean no interactions exist. ALWAYS consult with your doctor or pharmacist.

# Other drugs that your selected drugs interact with

- doxycycline interacts with more than 100 other drugs.
- lisinopril interacts with more than 200 other drugs.
- oxaliplatin interacts with more than 200 other drugs.
- oxycodone interacts with more than 300 other drugs.
- Ativan (lorazepam) interacts with more than 300 other drugs.
- Celebrex (celecoxib) interacts with more than 200 other drugs.
- Compazine (prochlorperazine) interacts with more than 500 other drugs.

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- Daily Multi-Vitamins with Minerals (multivitamin with minerals) interacts with more than 70 other drugs.
- Effexor XR (venlafaxine) interacts with more than 400 other drugs.
- Marinol (dronabinol) interacts with more than 200 other drugs.
- OxyContin (oxycodone) interacts with more than 300 other drugs.
- Protonix (pantoprazole) interacts with more than 50 other drugs.
- Pyridium (phenazopyridine) interacts with 8 other drugs.
- Vectibix (panitumumab) interacts with more than 10 other drugs.
- Zofran (ondansetron) interacts with more than 100 other drugs.

# Interactions between your selected drugs and food

lisinopril ↔ food

Applies to: lisinopril

GENERALLY AVOID: Moderate-to-high dietary intake of potassium can cause hyperkalemia in some patients who are using angiotensin converting enzyme (ACE) inhibitors. In some cases, affected patients were using a potassium-rich salt substitute. ACE inhibitors can promote hyperkalemia through inhibition of the reninaldosterone-angiotensin (RAA) system.

MANAGEMENT: It is recommended that patients who are taking ACE inhibitors be advised to avoid moderately high or high potassium dietary intake. Particular attention should be paid to the potassium content of salt substitutes.

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