

Grapefruit and CYP3A4

Interaction between Grapefruit and CYP3A4 [[1](#), [2](#)]

Cytochrome P450 3A4 (CYP3A4) is an enzyme in the liver and intestines that plays a crucial role in metabolizing many drugs. **Grapefruit contains compounds called furanocoumarins, which can inhibit CYP3A4 activity.** [[3](#), [4](#), [5](#), [6](#), [7](#), [8](#)]

Mechanism of Interaction [[9](#), [10](#)]

- Furanocoumarins in grapefruit bind to CYP3A4, preventing it from metabolizing drugs effectively. [[11](#), [12](#), [13](#)]
- This inhibition leads to increased drug concentrations in the bloodstream, potentially causing adverse effects or altering the effectiveness of medications. [[14](#), [15](#), [16](#)]

Affected Drugs [[17](#), [18](#)]

Numerous drugs are metabolized by CYP3A4, including: [[19](#)]

- Statins (e.g., simvastatin, atorvastatin)
- Calcium channel blockers (e.g., felodipine, nifedipine)
- Immunosuppressants (e.g., cyclosporine, tacrolimus)
- Anti-anxiety medications (e.g., diazepam, lorazepam)
- Antidepressants (e.g., fluoxetine, sertraline) [[20](#), [21](#), [22](#), [23](#), [24](#), [25](#), [26](#), [27](#), [28](#), [29](#), [30](#), [31](#)]

Consequences of Interaction [[32](#)]

Consuming grapefruit juice or eating grapefruit while taking CYP3A4 substrate drugs can: [[17](#), [33](#)]

Increase drug levels in the blood, Prolong drug effects, Enhance the risk of side effects, and Reduce the effectiveness of some drugs. [[34](#), [35](#), [36](#), [37](#), [38](#)]

Recommendations [[39](#), [40](#)]

- Avoid consuming grapefruit juice or eating grapefruit when taking CYP3A4 substrate drugs. [[3](#)]
- If you must consume grapefruit, wait at least 24 hours after taking your medication. [[41](#)]
- Consult with your healthcare provider if you have any concerns about grapefruit-drug interactions.

Note: The interaction between grapefruit and CYP3A4 is complex and can vary depending on factors such as the specific drug, the amount of grapefruit consumed, and individual differences. It is essential to seek professional medical advice for personalized guidance. [[42](#), [43](#), [44](#)]

Generative AI is experimental.

[1] <https://pmc.ncbi.nlm.nih.gov/articles/PMC3589309/>

[2] <https://pubmed.ncbi.nlm.nih.gov/11737987/>

[3] <https://www.fda.gov/consumers/consumer-updates/grapefruit-juice-and-some-drugs-dont-mix>

[4] <https://www.aafp.org/pubs/afp/issues/2006/0815/p605.html>

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- [6] <https://pmc.ncbi.nlm.nih.gov/articles/PMC1873672/>
- [7] <https://www.sciencedirect.com/science/article/pii/S0278691520300223>
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- [9] <https://www.naturalmedicinejournal.com/journal/grapefruit-juice-drug-interactions-practical-review-clinicians>
- [10] <https://www.sciencedirect.com/science/article/pii/S0024320598000137/pdf?md5=3ee7776b4f451ea6ed50ec9c2452664a&pid=1-s2.0-S0024320598000137-main.pdf>
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- [12] <https://pubmed.ncbi.nlm.nih.gov/14769198/>
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- [15] <https://pubmed.ncbi.nlm.nih.gov/9351897/>
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- [19] <https://www.linkedin.com/pulse/grapefruit-juice-potent-inhibitor-cyp3a4-its-drug-weiss-md-cpi-y5p0e>
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- [25] <https://pmc.ncbi.nlm.nih.gov/articles/PMC3839496/>
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- [27] <https://www.webmd.com/drugs/2/drug-11116/valium-oral/details>
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- [38] <https://addictionresource.com/drugs/hydrocodone/and-alcohol/>
- [39] <https://www.fyarrohcp.com/drug-interactions>
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