

**THE TELEGRAPH**  
**GRAPEFRUITS CAN TRIGGER OVERDOSES**  
**IN DOZENS OF MEDICINES**  
**RESEARCHERS WARN**

by

**Rebecca Smith**

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Millions of people taking medicines for high cholesterol, cancer and to prevent heart attacks are at risk of potentially life threatening side effects if they eat grapefruits, doctors have warned.

A study has listed 43 major drugs which are affected by eating grapefruits or drinking the juice and experts have warned there needs to be more awareness of the risks.

The number of drugs that interact with grapefruit increased from 17 in 2000 to 43 in 2008, researchers in Canada found.

Eating one grapefruit a day or drinking 200ml of juice was enough to trigger significant side effects in some of the patients.



Elderly patients were at particular risk because they are more likely to eat grapefruit and be on the medicines that interact with it, while their bodies are less able to cope with the effects of an overdose, the researchers said.

Grapefruits and some other citrus fruits, contain specific chemicals that affects an enzyme in the gut which can lead to a greater proportion of the drug being absorbed into the body.

This can result in massive overdoses causing serious side effects ranging from hallucinations, low blood pressure, to kidney poisoning, muscle damage, high heart rate and breathing problems. The findings were published in the Canadian Medical Association Journal.

Some people have died following the interaction and experts said doctors and pharmacists needed to be more aware of the problem.

The study, conducted by Dr David Bailey, of the Lawson Health Research Institute, in London, Ontario, listed several examples of interactions including one patient who suffered a potentially life threatening increase in heart rate while on the heart disease drug amiodarone and drinking between one and 1.5 litres of grapefruit juice a day.

Another one atorvastatin for high cholesterol suffered serious muscle damage after drinking freshly squeezed grapefruit juice daily for five days and one who developed a blood clot while on Ethinylestradiol, a form of hormone replacement therapy for menopause symptoms who had eaten a whole grapefruit at breakfast for three days.

Popular drugs affected in this way include simvastatin, taken for high cholesterol, clopidogrel to thin the blood, Tyverb for breast cancer, domperidone for sickness and powerful painkillers Fentanyl, Oxycodone and Ketamine.

One drug, dextromethorphan, is an anti-cough preparation used in over-the-counter products and other drugs that interact with grapefruit are some antibiotics, some anti-HIV drugs, quinine that is in tonic water and has been used against malaria, heart rhythm medicines, and anti-rejection drugs used following organ transplants.

For some drugs drinking 200ml of juice daily was enough to deliver three to six times the normal dose.

Dr Bailey said: "Many of the drugs that interact with grapefruit are highly prescribed and are essential for the treatment of important or common medical conditions.

"Unless health care professionals are aware of the possibility that the adverse event they are seeing might have an origin in the recent addition of grapefruit to the patient's diet, it is very unlikely that they will investigate it.

"In addition, the patient may not volunteer this information. Thus, we contend that there remains a lack of knowledge about this interaction in the general healthcare community."

The grapefruit effect can work in both ways, to reduce the amount of drug absorbed by the body, or to increase it, as was studied in this research.

Prof Simon Maxwell, Clinical Lead of Prescribing at the British Pharmacological Society and Professor of Clinical Pharmacology at the University of Edinburgh, said: "There are a lot of drugs on the list, including some very important high volume ones. But they represent a minuscule fraction of the compounds out there.

"Serious interactions are not a massive problem in Britain but we are probably not talking to our patients about it enough and awareness amongst doctors is definitely not high enough."

He said some of the interactions were theoretical such as dextromethorphan used in some cough mixtures as the amount of the active drug used in those medicines was very low. Also, despite

quinine in tonic water being listed as having caused a serious reaction in one patient, Prof Maxwell said this was likely to be extremely rare.

Prof Maxwell said researchers should investigate if the grapefruit effect could be harnessed so lower doses of these drugs could be prescribed with the juice to allow the same clinical effect from less of the active medicine.

But this would be complicated and costly to study he said.

Leyla Hannbeck, Head of Pharmacy at the National Pharmacy Association said: "Grapefruit juice and fresh grapefruit can interfere with the action of a range of prescription and non-prescription drugs.

"In some cases this can result in potentially dangerous levels of the active ingredient in the blood.

"So if you have any concerns about how your diet could affect your medicines ask your pharmacist for advice. A face-to-face discussion with the pharmacist can be the key to safer and more effective medicines use."

Ten drugs affected by grapefruits and the side effects it can cause:

Tyverb, for breast cancer – fast heart rate and bone marrow problems

Amiodarone, to prevent blood clots after surgery – fast heart rate

Clopidogrel, to thin the blood – becomes less effective

Dronedaron, for heart rhythm disorder atrial fibrillation – fast heart rate

Rivaroxaban, a blood thinning tablet to prevent stroke – stomach bleeding

Buspirone, for anxiety – dizziness and sedation

Fentanyl given orally for pain relief – slows breathing

Domperidone, for sickness – fast heart rate

Atorvastatin for high cholesterol – kidney poisoning

Simvastatin for high cholesterol – kidney poisoning

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