Christchurch Medicines Information Service
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Clinical Pharmacology
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Medicines and Meals – Food for Thought?

- The timing of medicine administration in relation to food is not important for most medicines. In general, patients should be advised to take their medicines consistently at the same time with respect to meals.
- Adherence to medicines is a primary determinant of treatment success.
  - Poor adherence is common, especially with complex medicine regimens.
  - Increasing complexity by restricting patients to administration times in relation to food may adversely affect their adherence, and instructions to take medicines on an empty stomach may be particularly problematic.
- Limit advice about food to those few medicines for which any food interactions are clinically relevant, or where the timing of food significantly impacts the incidence of adverse reactions.
  - There is not good evidence that taking a medicine with food reduces gastrointestinal adverse effects, but this could be offered as an option if these effects are troublesome.
- Specific recommendations for dosing in relation to food are often included in prescribing and consumer information. There can be discrepancies in the advice given by different sources, often due to information not being updated as new evidence becomes available.

Factors to consider	Clinically relevant examples	Advice
Pharmacokinetic		
Absorption Is it significantly changed by food?	Food decreases absorption • alendronic acid, risedronate	Take at least 30 minutes before food
	Food increases absorption • isotretinoin, itraconazole capsules	Take with food
	Food decreases or increases absorption • buspirone, tacrolimus	Take at the same time in relation to food
	Calcium decreases absorption • ciprofloxacin, norfloxacin	Don't take with milk or yoghurt
Metabolism Is it significantly changed by food?	Grapefruit inhibits first pass CYP3A gut metabolism • atorvastatin, simvastatin, ciclosporin, felodipine	Avoid grapefruit and its juice
Pharmacodynamic		
Does food change the therapeutic effect of the medicine?	Foods high in vitamin K e.g. leafy green vegetables can reduce INR • warfarin	Avoid large, sudden changes in diet Abstinence is not required
	Licorice can have mineralocorticoid activity (fluid retention, hypertension, hypokalaemia) • antihypertensives, corticosteroids	Avoid large amounts of licorice (>20 g/day)
	Food increases efficacy • acarbose, pancreatic enzymes, phosphate binders (calcium or aluminium)	Take with food
	Food decreases efficacy • mouthwashes, oral drops, gels or lozenges e.g. oral antifungals	Take after food to ensure maximum contact time
Does the medicine change the effect of food?	Tyramine-containing foods can cause hypertensive crisis • non-selective MAOIs e.g. tranylcypromine	Avoid tyramine-containing foods e.g. aged cheese, meat or yeast extracts, pickled fish, broad bean pods, sauerkraut, salami, protein drinks
Adverse effects		
Are they reduced by food?	Food reduces risk of hypoglycaemia • sulfonylureas	Take with food
	Food may reduce gastrointestinal upset • amoxicillin+clavulanate, azathioprine, corticosteroids, digoxin, metformin, metronidazole, NSAIDs	Try taking with food if gastrointestinal adverse effects occur

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References

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