

Advice sheet: food & drink and the monoamine oxidase inhibitors

Why do some foods and drinks interact with monoamine oxidase inhibitors (MAOIs)?

Tyramine is a naturally occurring substance that is present in a number of foods and drinks. MAOIs prevent the breakdown of tyramine, and a build up of this substance can result in dangerous increases in blood pressure (hypertensive crisis). Symptoms may include a severe headache (particularly at the back of the head), dizziness, flushing, sweating, nausea, vomiting, a pounding heart, numbness or tingling of the hands or feet, pain or stiffness in the neck, sensitivity to light, or chest pain.^{1,2} If symptoms occur, medical attention should be sought immediately and it is advisable not to lie down as this may increase the blood pressure further.² Avoiding foods and drinks with a high tyramine content will help prevent this adverse effect occurring.

The tyramine content of foods and drinks can vary between similar products and also within different samples of the same product. The responses of different individuals to the same quantity of tyramine may also vary.² Foods that are normally low in tyramine may become a risk if they are fermented, matured, or allowed to spoil, which can increase the tyramine content considerably.²

The table on the following page provides examples of foods and drinks containing tyramine. They have been grouped according to risk. Those containing large amounts of tyramine are associated with the greatest risk, therefore foods in the high and moderate risk categories should be avoided by all people taking the following MAOIs:

- **Isocarboxazid**
- **Phenelzine**
- **Tranylcypromine**
- **Selegeline** (doses greater than 10mg daily)

Foods and drinks in the low/no risk group are generally safe to eat and drink. However, some of the foods or drinks in this category may be associated with a higher risk if they are consumed in large quantities.^{1,3} As the response to tyramine may vary between individuals, it is important to be aware of any symptoms that may be suggestive of a reaction so that similar foods can be avoided in the future.

After stopping an MAOI, how long should the foods and drinks continue to be avoided for?

MAOIs continue to prevent the breakdown of tyramine for approximately 3 weeks after they are discontinued. Therefore it is important to continue to avoid high/moderate risk foods for an additional 3 to 4 weeks after stopping the tablets.^{1,2}

What about alcohol?

Beers and wines contain large amounts of tyramine and therefore fall into the high and moderate risk categories and must be avoided. However, small quantities (i.e. 1 unit) of white wine and clear spirits, such as gin and vodka, are thought to be safer in this respect.¹

One potential side effect of MAOIs is a lowering of the blood pressure. In some people alcohol can have a similar effect, therefore the manufacturers of MAOIs advise against drinking alcohol of any sort.^{2,4,5} Avoiding alcohol altogether is the safest recommendation, however some people may wish to have the occasional drink. If white wine or clear spirits are consumed, this should be done with extreme caution and only in small quantities (i.e. 1 unit) as it is difficult to determine how certain individuals will react. In some patients even small amounts of alcohol may enhance the hypotensive (blood pressure lowering) side effects of MAOIs resulting in dizziness and faintness.¹

Moclobemide, **selegeline** (doses up to and including 10mg daily), and **linezolid** also prevent the breakdown of tyramine but to a lesser extent. Therefore patients taking these drugs should avoid eating/drinking large amounts of tyramine-rich foods (see moderate and high risk categories overleaf).¹

This table is based on information from references 1 to 5 listed below. Freshness of food is vital; avoid any food if there are doubts about its freshness. The lists of foods and drinks are not intended to be exhaustive, therefore the table should be used as a guide only.

Food group	Risk	Examples of foods
Dairy products	High	Sour cream, Cheddar, Camembert, Brie, Stilton, Gorgonzola, Danish Blue, Edam, Gouda, Emmental, Gruyere, Mozzarella, Munster, Mycelia, Parmesan, Roquefort, any cheese containing foods e.g. cheese snacks (cheese containing crisps, Mini Cheddars, cheesy biscuits), salad dressing, pizza, fondue, cheese sauces, etc.
	Moderate	Processed cheeses.
	Low / no risk	Yoghurt, cream cheese, cottage cheese, ricotta, fresh cream, boiled eggs.
Fish & meat	High	Smoked, pickled, salted, or otherwise aged fish or meats, hung or badly stored poultry/game, or meat which might be "going off", liver & liver pate, processed meat / sausages (e.g. bologna, salami, pepperoni, summer sausage), meat extracts such as Bovril, Oxo, and some commercially available gravies, shrimp paste.
	Moderate	Un-refrigerated fermented fish or meats, un-refrigerated fermented chicken or beef liver, dried fish, tinned fish, caviar.
	Low / no risk	Anchovies, cockles, snails, wild game (not hung), gravy made from roast or fresh meat juices.
Fruit & vegetables	High	Sauerkraut.
	Moderate	Banana <i>skins</i> (the fruit of the banana inside the skin is of low risk – only the skin/peel needs to be avoided), broad (fava) bean <i> pods</i> (the beans themselves do not pose a risk – just the pods), figs, <i>over-ripe</i> avocados, <i>over-ripe</i> fruit, and <i>large</i> quantities of plums, spinach, or raspberries.
	Low / no risk	Raisins, chips with vinegar, mushrooms, fresh fruits and vegetables, tomato juice, <i>small</i> quantities of plums, spinach, or raspberries.
Miscellaneous	High	Meat & yeast extracts such as Bovril, Marmite, Oxo, Brewers Yeast, and some commercially available gravies, dried soups, slimming products (e.g. Slimfast).
	Moderate	Soy sauce, soybean curd (tofu), miso, artificial sweeteners, textured vegetable protein (e.g. Quorn, soya 'meat'), ginseng, <i>very large amounts</i> of chocolate (chocolate is safe in most cases, but very large amounts should be avoided), and nuts – peanuts, coconuts, and brazil nuts.
	Low / no risk	Worcestershire sauce, curry powder, cookies, <i>small</i> quantities of chocolate, and gravy made with UK Bisto (if consumed in moderation). Yeast used in baking is safe, so eating bread does not pose a risk.
Drinks (see also the notes on the previous page)	High	Red wines (including Chianti), vermouth, whisky and liqueurs, ales, beers, lagers, homemade wines, alcohol-free beers and wines.
	Moderate	Large amounts of white wine or clear spirits.
	Low / no risk	Small quantities of: white wine or clear spirits (i.e. 1 unit), coffee and tea.

References:

1. Baxter K, editor. Stockley's drug interactions. 7th ed. London: Pharmaceutical Press, 2006.
2. Nardil® (phenelzine) tablets: Interaction with foods. Information sheet supplied by Concord Pharmaceuticals Ltd. Received: October 2007
3. Bazire S. Psychotropic drug directory 2005. Salisbury, Wilts UK: Fivepin Ltd. 2005.
4. Goldshield Pharmaceuticals Ltd. Tranylcypromine Patient Information Leaflet. Partially revised: September 2001
5. Cambridge Laboratories. Isocarboxazid Patient Information Leaflet. Date of preparation: March 2003.