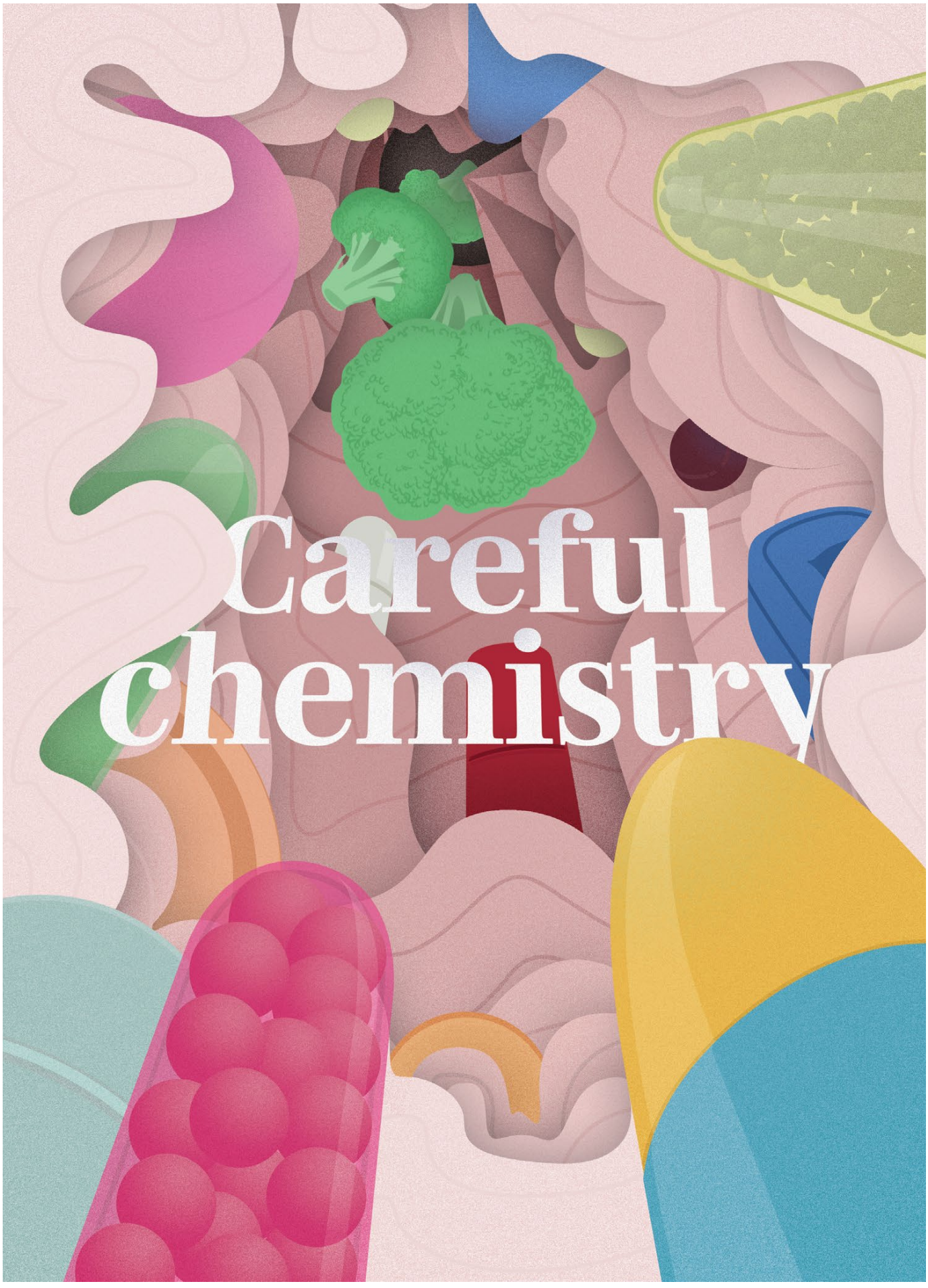

Careful chemistry

Some foods can cause problems with prescription and over-the-counter medications. ***Sally Parr*** looks at what to watch out for and explains why we should always read the small print

A pill for every ill? It certainly seems that way, with more than 1,100m prescriptions handed out in England in 2017/18[1] and the numbers rising year on year.[2] We might view such figures as progress, because it implies that conditions are being more accurately diagnosed and that appropriate treatments are available; yet every time we pop a pill, there's a 'risk versus benefit' to weigh up.

Whilst some drugs do relieve pain, alleviate unpleasant symptoms or treat specific conditions, there is also the potential for negative interactions with drinks, foods, nutritional supplements, herbal products or other drugs.[3] It is also possible that even the bacteria in our gut can affect medication or supplements.

Recent research from the University of California San Francisco, USA, for example, identified how specific bacteria in the microbiome can interfere with a drug taken to relieve the symptoms of Parkinson's disease. Levodopa (L-dopa) is taken to deliver dopamine to the brain, alleviating symptoms of the disease; but its effectiveness can vary from person to person. Because previous research had shown antibiotics to improve patients' response to L-dopa, it was speculated that bacteria might have a role in affecting L-dopa's efficacy. In this recent study, scientists discovered that one strain of bacteria *Enterococcus faecalis (E. faecalis)* was responsible for degrading L-dopa every time.[4]

Prediction problems

Drug and nutrient interactions (DNIs) can also be difficult to predict because they involve multiple factors.[5] Medication can affect food intake, perhaps by suppressing appetite, and can even affect how nutrients from food are metabolised. (See *Don't mix and match* and *Thinking of supplementing?)* Nevertheless, check with your GP or pharmacist if you are prescribed a new medicine, so you know what to avoid, and always read the information provided with the medication.

But DNIs aren't the whole story. It's also worth bearing in mind that using certain medications for an extended period can also deplete levels of nutrients in the body.[5,6] This is an area where the research is described as being "quite limited",[5] which is unfortunate considering how widespread the prescribing of various medicines is,[2] how extensive the interaction impact can be[5] and the fact that symptoms caused by nutrient depletion may also influence compliance.[7]

Oral contraceptives

The idea that over-the-counter prescriptions could impact nutritional status is not new. A report published in *The Lancet* as far back as 1975 noted that among oral contraceptive pill (OCP) users, there were reductions in vitamins B2, B6, B9, B12 and C, with lowered levels of B6 thought to be contributing to depression and sub-optimal glucose tolerance.[8] Fast forward to 2013 and the impact of the OCP on users' nutritional status was still being highlighted[9] — with researchers linking the reduction in B6 levels with a potentially increased risk of blood clots.[10] Another study, published a year later, found that supplementing with B6 among nutritionally vulnerable women meant they were less likely to report side effects and so would continue to use this method of contraception.[7]

Good food sources of vitamin B6 include turkey, fish, oatmeal, eggs, soya beans and legumes. (Note that over-supplementation with vitamin B6 for extended periods may result in peripheral neuropathy, a loss of feeling in the arms and legs, so always seek support from a nutritional therapist who is registered with BANT and the CNHC, or from your GP rather than self-prescribing.

Difficult to diagnose

However, it was only in 2018 that researchers in the USA finally amassed and investigated as much of the available evidence as they could; concluding that long term use of both prescribed and over-the-counter drugs could result in "clinically relevant" nutrient deficiencies.[5] They argued that supplementation should be recommended if medications thought to affect nutritional status were taken, particularly among vulnerable groups most at risk of deficiency.

But part of the problem lay, the researchers found, in the fact that the symptoms of deficiency would occur over long periods of time, didn't tend to present as 'textbook' cases, and were most likely to be put down to the condition or the ageing process — making them difficult to diagnose and address effectively with supplementation.[5]

Proton pump inhibitors

Take Proton Pump Inhibitors (PPIs), for example. Given for gastro-oesophageal reflux disease (GORD), they are among the most commonly prescribed medications in the world.[11] (Also see p.12 *Optimum Nutrition* Autumn 2018, available via **www.ion.ac.uk**.)

Described in *Pharmacy Times* last summer as "nutrient robbers",[12] in an article devoted to how to "deprescribe" them, PPIs are thought to cost the NHS more than £100m each year,[13] with some practices prescribing them indefinitely.[11] Interestingly, it's their propensity to limit production of gastric acid — the very thing for which they are prescribed — that can cause problems in the longer term. This is because many nutrients require an acidic environment to 'unlock' them, ready for subsequent uptake by the body,[11] but the PPI, through doing what it is meant to do, lowers this ability.

PPI users are also thought to have a significantly lower abundance of beneficial bacteria in their gut microbiome due to alterations in

DON'T MIX AND MATCH...

- Grapefruit juice interferes with liver enzymes needed to break down medications before they are eliminated. This can result in increased levels of the drug remaining in the body. Cranberry juice can also be problematic.
- Green leafy veg is rich in vitamin K. It is important if taking anti-coagulants such as warfarin to be consistent with intake and avoid eating large amounts of this type of veg as it may interfere with blood clotting in the body.
- Aged cheeses, yeast extract, red wine, pickled fish and broad beans should be avoided if taking MAO inhibitors. The tyramine in the food can react with the drug to cause a potentially dangerous increase in blood pressure. This class of anti-depressant is rarely prescribed now due to its propensity to interact with tyramine-rich foods.
- Natural liquorice may cause salt and fluid retention, and should not be taken in conjunction with blood pressure-lowering drugs.
- Avoid taking milk with antibiotics because the medication may prevent calcium being absorbed.
- Garlic should be avoided if taking fish oils, vitamin E or other blood thinning supplements.

> Always ask your GP or pharmacist to explain any potential nutritional deficiencies that may occur in the longer term due to taking certain medicines

stomach pH, often resulting in the increased likelihood of small intestinal bacterial overgrowth (SIBO) and gastrointestinal infections.[11] This can have a detrimental knock-on effect — particularly because stomach acid, which the PPI lowers, is essential for supporting the body and protecting us from various pathogens that can cause infections.

THINKING OF SUPPLEMENTING?

In a small survey of adults aged 65 and above, researchers at the University of Hertfordshire, UK, found that just over a third of 155 respondents (33.6 per cent) used a combination of herbal medicinal products and dietary supplements alongside prescription medication.[3] Others (20 per cent) used only herbal medicinal products with prescription drugs. Sixteen participants were found to be at risk of potential adverse drug interactions.

Potentially problematic interactions included use of: evening primrose oil, St. John's Wort, ginkgo, omega-3 and glucosamine, all of which are regularly purchased over the counter.

Foods such as garlic were also implicated if combined with aspirin. Other herbal remedies that affect blood clotting, such as ginseng, were also noted to be problematic when taken with warfarin, with issues including reduced effectiveness of prescription drugs and increased bleeding.

Long term PPI users may also be found to be magnesium (Mg) deficient.[14] Mg is hard to come by anyway because low levels in soil[15] decrease dietary uptake, whilst stressful, hectic lifestyles can lower the body's stores even further.

Muscle twitches or cramps, low mood and tiredness may all be signs that you need to up the amounts of Mg-rich foods in your diet. But because these niggles can often be attributed to age, life stage or general busyness, they can be difficult to pin down to a specific nutrient deficiency.[5]

Some good sources of Mg include dark green leafy veg (cooked to reduce oxalic acid, which is sometimes referred to as an 'anti-nutrient' because it can interfere with absorption of essential micronutrients), avocado, brown rice, black beans, yoghurt, almonds, pumpkin seeds, kefir and — wait for it — dark chocolate. Mg is also absorbed through the skin, making a bath with Epsom salts a good way to take in this essential micronutrient.

It is worth noting, however, that because the symptoms of high levels of stomach acid can present in the same way as low levels (digestive discomfort and malabsorption being common features of both), PPIs may be prescribed when increased digestive support is actually called for.

Malnourishment

It is also worth noting that some medications may also act as appetite suppressants, with the result that nutrients aren't replenished from day-to-day eating. This is particularly of concern, for example, with children with conditions such as ADHD[6] and with the elderly who may already have diminished appetites.

In such situations, it may be worth considering nutritional supplements, in addition to looking at diet to provide nutrients that need topping up. It is, however, recommended that rather than self-prescribing, you consult your GP or work with a nutritional therapist who is a member of BANT and registered with the CNHC, and who has been trained to identify DNIs and potential nutritional depletions. A registered nutritional therapist can also work with you to support your digestive health to help the body absorb nutrients effectively and efficiently from your diet. Also speak to your GP or pharmacist for advice on interactions between prescribed medications, food and other drugs.

It is essential that you never stop taking any prescribed medications without first discussing the risk versus benefit with your GP or consultant.

Common meds, common problems

Always ask your GP or pharmacist to explain any potential nutritional deficiencies that may occur in the longer term due to taking certain medicines, and take time to read any accompanying information. This applies to both prescribed and over-the-counter medications, and can include:

- Statins, which may reduce levels of CoQ10 (an antioxidant used by cells to produce energy);
- Diuretics, where mineral depletion can become a problem;[6]
- Painkillers, which may irritate the gut lining and induce sub-optimal digestive function;[5]
- Weight-loss drugs that prevent fat from being absorbed, therefore limiting fat-soluble vitamin absorption;
- Anti-depressants, which may cause craving for starchy foods, often resulting in blood sugar imbalance and insulin resistance issues;[6]
- Antibiotics, which may disrupt the diversity of the gut microbiome.[5] Some antibiotics may also bind with calcium, preventing its absorption in the gastrointestinal tract.[6]

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