



## Prepared salad

Ready-to-eat bagged salads are commonly available but are they worth paying extra for?

Salad leaves, lettuce and other such greens are a good source of vitamins, calcium and antioxidants. They are convenient, as no cooking is required and the wide variety available means your salad days need never be dull. The credit crunch has revived the habit of bringing your own lunch to the office rather than ordering it at the deli counter. If you are trying to tighten your purse strings you could do worse than to rise a little earlier to prepare a home-made salad before work. All you need to do is wash and dry the salad leaves and put them in a container with any other salad ingredients you have in the fridge. Most shops and supermarkets now sell ready-prepared bags of salad with no washing or chopping required. However, these mixes of spinach, rocket, watercress and other leaves can be very expensive when compared with buying a standard head of lettuce that you wash and pull apart yourself.

### Know your salads

Salad leaves are nutritious and low in calories. Use our guide to familiarise yourself with the many types available and mix and match the different leaves to get a wide variety of nutrients. The darker the leaves the more vitamins, antioxidants and minerals they contain.

- **Baby spinach** contains folate, beta carotene, iron, potassium and vitamins and is good for the eyes as it contains lutein to protect the retina from the sun's rays.
- **Butterhead** is the 'standard head of lettuce' commonly found in Irish shops. It contains folate and iron. Choose the greenest one possible to get the most goodness from the leaves.
- **Chicory** (red or green) is crunchy and slightly bitter and packed with phytonutrients which help the body to fight disease.
- **Cos/Romaine** is a tough, dark green lettuce containing folate and beta

carotene, which is known to mop up free radicals. It is the main ingredient in the popular Caesar salad.

- **Frisee** is similar to rocket and contains inulin which boosts levels of good bacteria in the gut.
- **Iceberg** has pale green leaves meaning this type is lowest in nutrients but does contain folate and fibre.
- **Lamb's lettuce** is a good source of potassium and also contains iron which is more easily absorbed than the iron in spinach.
- **Lollo rosso** has red-tinged leaves which are richer in flavonoids than paler types of salad leaves and this helps to protect against free radicals which can damage cells.
- **Rocket** contains folate, magnesium and iron. It has a peppery flavour and adds to your daily quota of fibre.
- **Watercress** is a good source of vitamin C and folate, which aids a healthy nervous system and cell growth.

### AT A GLANCE

Know your salads.

To wash or not.

Contamination risk.

## Pre-packaged versus home prepared salad leaves

*Consumer Choice* purchased five bags of ready prepared salads and one head of lettuce from supermarkets and reviewed them in terms of freshness. The brands we tested were Florette Crispy Salad 200g, Tesco Seasonal Four Leaf Salad 75g, Dunnes Mixed Salad 200g, Marks & Spencer Salad Bowl 150g, Superquinn Italian Style Lettuce 170g and one standard round butterhead lettuce.

The bagged salads ranged in price from €1 for Tesco's 75g bag to €2.79 for the Marks and Spencer 150g and Superquinn 170g salads while the standard head of lettuce cost €0.79. They all had the same use-by date.

On day one, we opened the bags and found that the Florette Crispy Salad contained some inedible brown leaves which we picked out and threw away.

On the second day, both the Florette Crispy Salad and the Marks and Spencer Salad Bowl had evidence of leaves wilting even though it was three days before their use-by date. Both of these also had a number of brown leaves which we again picked out. The salad from Dunnes was now very dry and we found many dehydrated leaves in the bag.

We left the salads in the fridge and looked at them again on their use-by date. The un-chopped head of lettuce had deteriorated the least, whilst we thought the pre-packaged salads all omitted unpleasant smells and none of them had many leaves left that could have been used to make a tasty lunch.

Unfortunately packaged salads can deteriorate rapidly once they are cut up and once the bag is opened they do not retain their nutritious properties as long as un-chopped lettuce does.

### To wash or not?

Microbiological safety is a key issue when it comes to ready-prepared salads because they are intended to be eaten raw. Most ready-prepared salad labels tell the consumer that there is no need to wash the contents because the leaves are normally washed by the manufacturer in a chlorine rinse in order to avoid contamination.

Last year, members of the Fresh Prepared Salads Producer Group in the UK (see *Useful contacts*), which supplies washed and ready to eat mixed salad packs to the major supermarkets, issued a statement to consumers following

## PRESERVATION METHOD

**MAP (modified atmosphere packaging)** is the process used by manufacturers to slow down the growth of bacteria and extend the shelf life of bagged salads. It removes or restricts oxygen and replaces it with a mix of ozone and carbon dioxide.

various negative reports about the use of Modified Atmosphere Packaging (MAP) and chlorine. One criticism they refuted is that the use of MAP destroys the nutritional value of the salad and misleads the consumer into believing that the salad is fresher than it really is. The group says that the MAP process involves modifying the balance of the natural gases found in air - most often just reducing the level of oxygen in order to slow down respiration and that this is "a perfectly safe process."

Concerns have also been raised about the chlorine washing technique because of the possible formation of chlorination by-products that may be linked to ill health. The prepared salad manufacturers carried out a programme of testing to identify which (if any) by-products are present and to re-confirm that their products are safe. In tests, a range of prepared salads was checked for a number of possible chlorination by-products. In the vast majority of cases, no compounds were detected. Where levels were detected, they could only be measured in 'parts per billion'. The group says "these tiny levels pose absolutely no threat to health and are substantially below WHO (World Health Organisation) health guideline levels." Members of the Fresh Prepared Salads Producer Group include Geest, Nature's Way Foods, Vitacress Salads, Fresh Del Monte, Florette and Kanes Foods.

### Contamination risk

According to Science Daily (see *Useful contacts*), salmonella and E. coli O157, a

strain of E. coli, can spread to salads and vegetables if they are fertilised with contaminated manure, irrigated with contaminated water, or if they come into contact with contaminated products during cutting, washing, packing and preparation processes. Indeed, outbreaks of food poisoning caused by packaged salads have occurred in the past in the USA and UK. A 2008 study by scientists at the University of Birmingham revealed that some salmonella bacteria use the long stringy appendages they normally use to help them 'swim' and move about to attach themselves to salad leaves and other vegetables, causing contamination and a health risk. Further research into understanding what factors affect the susceptibility of different types of salads to contamination is ongoing. There are many different pathogenic strains of salmonella and they typically cause diarrhoea, fever and stomach cramps. Infections typically clear up within five to seven days. Antibiotics may or may not be necessary but medical advice should be sought as required. According to Teagasc (see *Useful contacts*) consumers have a major role to play in controlling salmonella by always washing salad vegetables and fruit before use.

### Salad tips

- Check the best-before date and choose the packet with the most time left before expiry.
- Avoid bags with wilting or brown leaves inside.
- Always separate the leaves and then wash lettuce, bagged or otherwise, before eating to remove any dirt and bacteria.
- Adding olive oil to salad is a good way to increase your absorption of fat-soluble vitamins.
- Grow your own as an alternative (see 'Sowing the seeds', *Consumer Choice* March 2009, p88) as it is cheaper and can be done without chemicals.

### Useful contacts

#### Food Safety Authority of Ireland

Advice 1890 336 677  
tel (01) 817 1300  
fax (01) 817 1301  
email info@fsai.ie  
www.fsai.ie

#### Safefood

tel (01) 448 0600  
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Helpdesk 1850 404 567  
www.safefood.eu

#### Teagasc

Irish Agriculture Food & Development Authority  
Head Office  
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tel (059) 917 0200  
fax (059) 918 2097  
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www.teagasc.ie

#### Fresh Prepared Salads Producer Group

www.salad-recipes.co.uk

#### Science Daily

www.sciencedaily.com

Report by  
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## choice comment

Despite some reservations about pre-packaged varieties, salads remain a good way to help us to achieve our recommended consumption of five portions of fruit and vegetables per day. In order to avoid missing out on the healthy properties, particularly of the darker green or red salad leaves, try buying a whole head of leaves such as radicchio instead. These are available in fruit and vegetable shops and in some supermarkets. They may be a little more expensive than a standard round head of lettuce but are cheaper than a bag of chopped leaves and are not sold in modified atmosphere packaging. They must be washed well but no other preparation is needed. You can pull off the leaves yourself as they are needed so they should stay fresher for longer than the pre-prepared varieties.