

IRON IN PREGNANCY

Are you getting
enough?



Why do pregnant women need the most iron?

Women are particularly vulnerable to iron deficiency and anaemia during pregnancy. This is because the body must undergo dramatic changes to support the growth of a healthy baby. Iron is needed to grow a healthy placenta which is how the baby receives its nutrients. It is also needed to make extra red blood cells to deliver oxygen to the mother's tissues and the baby.



FACT Did you know you have around 30% more blood in your body while pregnant? This extra blood and the increasing demands from the growing baby and placenta requires more iron than usual.

Because iron requirements increase markedly during pregnancy, it's very important women enter pregnancy with plenty of iron stores. If a woman has low iron stores, or low levels of iron in her blood, it can be very easy for her to become iron deficient or develop anaemia during pregnancy.

One in 14 New Zealand women are low in iron and many experience issues with anaemia during pregnancy.

FACT Iron is needed for a healthy immune system. You are more prone to infection if your iron stores are low.

Iron is an essential mineral needed for good health and is found in every cell in the body. It's needed to make haemoglobin which transports oxygen around the body in our blood. Iron is also important for heat and energy production, plays a role in the immune system and is essential for brain development and function.

FACT During pregnancy you need more iron than at any other time in your life.

Daily Iron Requirement for Women



Signs & Symptoms

Iron is needed for many functions in the body and low iron can greatly impact the way you feel.

If you have low iron levels, you may:

- Feel fatigued and lethargic
- Become easily irritated
- Look pale or washed out
- Have heart palpitations (the feeling of your heart beating abnormally fast or with an irregular rhythm)
- Feel dizzy
- Be unable to catch your breath or feel breathless
- Feel run down and more prone to colds and infections
- Feel light headed or experience headaches

It is not uncommon to feel tired or lack energy when pregnant, so it can be hard to know if it is normal or a symptom of iron deficiency. You should always talk with your lead maternity carer (LMC) or doctor if you are concerned.

How can I get enough iron during pregnancy?

The most common cause of anaemia in pregnancy is insufficient dietary iron. The best way to prevent iron deficiency anaemia is a healthy, iron-rich diet. However, if a woman enters pregnancy with low iron stores she may not be able to meet the increased iron requirements from diet alone. These women may be prescribed oral iron supplements from their LMC or doctor.

Everyone benefits from eating a healthy, well-balanced diet.

A healthy eating pattern includes food from the following food groups each day:

- **Fruit** (at least 2 serves) and **vegetables** (at least 5 serves) with a variety of colours
- **Legumes, nuts, seeds, fish and other seafood, eggs, poultry or red meat with fat removed** at least 3.5 serves
- **Grain foods** at least 8.5 serves
- **Milk and milk products** at least 2.5 serves

FACT To get enough iron each day, you should eat a variety of foods from each of the four food groups.

Iron: where is it?

While iron is found in a number of foods, some are better sources of iron than others. There are two types of iron: haem and non-haem.

- **Haem iron** is found in animal foods such as beef, lamb, liver/kidney*, poultry, pork, venison, fish and seafood.
- **Non-haem iron** is found in beans, lentils, eggs, nuts, dried fruit, vegetables and iron-fortified cereals.

The body absorbs haem iron more easily, with up to a quarter being used. Non-haem iron is poorly absorbed and is inhibited by several dietary factors such as tea and coffee, calcium and phytic acid found in whole grains and beans. You should aim to eat both haem and non-haem iron foods regularly for an iron-rich diet.

* Limit liver/kidney to 100g a week and avoid pâté.

For top iron intake:

- **Eat regular iron-rich foods** rather than one iron-rich meal per day. Small but frequent consumption is better.
- **Drink tea and coffee between meals** rather than with your meal as these beverages decrease iron absorption.
- **Avoid having dairy products with iron-rich foods** as calcium inhibits iron absorption.
- **Choose an iron-fortified breakfast cereal.**
- **Eat citrus fruit, strawberries or kiwifruit straight after your meal** or add lemon juice to greens/salads to increase non-haem iron absorption.
- **Add brightly coloured vegetables to your meals** to help increase iron absorption. Brightly coloured vegetables are a good source of vitamin C.

Iron deficiency during pregnancy

All women have an increased risk of iron deficiency anaemia over the course of their pregnancy. Risk factors include gestational diabetes, teenage pregnancy, a poor diet, twins, smoking and some chronic diseases. Women who have been iron deficient in the past or those who have low iron stores before becoming pregnant are also at risk.

Iron deficiency and anaemia have been associated with postnatal depression, increased likelihood of blood transfusion, increased risk of infection and difficulties with bonding and breastfeeding. Severe anaemia is also linked to low birth weight and preterm birth.

TIP You might think feeling run down or tired during pregnancy is due to leading a busy lifestyle, but both are common symptoms of iron deficiency. Talk to your Lead Maternity Carer or doctor if you are feeling run down or tired.

All women in New Zealand are offered antenatal blood tests at their first appointment with an LMC or doctor and this is when the full blood count is tested. This includes haemoglobin, platelet levels and white cells. Haemoglobin determines how much iron is in your blood. A normal haemoglobin level means you have healthy amounts of iron in your blood, but it does not describe your iron stores.

► *Ferritin is an iron-storing protein and can be thought of as having savings in the bank. To determine your iron stores, you will need to have ferritin tested as well. This is not routinely tested in early pregnancy so if you are at an increased risk of iron deficiency, or have signs and symptoms, ask your LMC to check iron stores as well.*

Good nutrition is an important preventative measure, but not an effective form of treatment for iron deficiency anaemia. Maintaining healthy iron stores before pregnancy and in the early stages of pregnancy is important to prevent iron deficiency in the second and third trimesters.

Recipe is on page 18

MAXIMISE IRON IN YOUR MEALS

Combine red meat with plant foods high in non-haem iron and vitamin C to increase iron absorption.

Your baby

FACT *Your baby's iron status at birth largely depends on your iron status during pregnancy.*

The most iron is transferred to the baby in the third trimester. During this time, a baby is laying down their iron stores and these stores must last from when they are born until they are introduced to complementary foods at around 6 months.

Low birth weight babies born preterm are particularly vulnerable to iron deficiency as they have not been able to build adequate iron stores to last until they are around 6 months.

Iron is transferred from you to your baby via the placenta with your baby taking priority. This means even if you have low iron levels, your baby should receive adequate amounts of iron. Women who are iron deficient or anaemic may not be able to provide enough iron to the baby.

TIP *Maintaining an iron-rich diet throughout pregnancy helps build your own and baby's iron stores to help give them the best start in life.*

Why eat red meat during pregnancy?

Including lean meat in your diet can have a positive impact on your iron status. Lean red meat is not only a good source of easily absorbed iron; it also contains something called a “meat factor” which helps to enhance iron absorption from non-haem iron-sourced foods.

Adding a moderate amount of lean red meat to vegetable or grain-based recipes can greatly increase the amount of iron absorbed from the meal.

Lean red meat is a good source of complete protein and provides all the essential amino acids needed for growth and repair.

Lean red meat, such as beef and lamb are also excellent sources of essential minerals such as zinc, selenium and the B vitamins which are all needed in higher amounts during pregnancy. Selenium acts as an antioxidant to protect the body against damage. Both zinc and selenium help keep our immune system healthy.

TIP *Women need more protein during pregnancy and including lean red meat is a suitable way to meet higher needs.*

Iron for Vegetarians & Vegans

Pregnant women who follow strict vegetarian or vegan diets may need extra support and information to ensure they meet their dietary requirements for iron along with protein, vitamin B12 and calcium. Dietary recommendations are included in the Ministry of Health's Eating & Activity Guidelines for New Zealand Adults (2020), and where necessary seek the advice of a Registered Dietitian or Registered Nutritionist.



Iron-rich recipes to enjoy during your pregnancy

Beef Nachos with Avocado Salsa

Prep: 15 mins

Cook: 35 mins

Serves 4

INGREDIENTS

Nachos

500-600g Quality Mark beef mince
1 onion, finely chopped
3 cloves garlic, crushed
2 teaspoons mild smoked paprika
1 teaspoon ground cumin
¼ teaspoon chilli powder (optional)
400g can chopped tomatoes
400g can red kidney beans, drained
2 cups beef stock
1 cup roasted red capsicum, sliced
1 teaspoon brown sugar
3 - 4 wholemeal wraps

Salsa

1 large ripe avocado, diced
1 cucumber, deseeded, diced
½ cup fresh coriander, chopped
Juice of 1 lime

To serve

Sour cream
Fresh coriander

METHOD

Preheat the oven to 180°C.

Nachos

Heat a little oil in a large frying pan over a high heat. Fry the mince in two batches to brown, drain off the fat and set the aside.

Reduce the heat to medium and add the onion and garlic, stirring for 5 minutes until soft. Add the drained mince back to the pan along with the spices, tomatoes, beans, stock, capsicum and sugar. Simmer until reduced to a thick sauce (around 20-30 minutes). Taste and season.

Brush the wraps lightly with oil, sprinkle with a pinch of salt and place on oven trays. Bake in the oven for about 10 minutes or until crisp, turning over once. Break them into big chips.

Salsa

Combine the ingredients gently in a bowl just before serving and season.

To serve

Place chips onto plates and top with the mince. Add a spoonful of salsa, a dollop of sour cream and fresh coriander.

10.5mg
IRON
per serve



TIP Vitamin C helps increase absorption of non-haem iron found in plant foods. The capsicum and tomatoes have vitamin C and will help with non-haem iron absorption from the kidney beans.

Indian-spiced Lamb & Chickpea Curry

Prep: 15 mins

Cook: 3 hours

Serves 4-5

INGREDIENTS

1kg Quality Mark lamb shoulder chops
2 tablespoons butter
1 onion, finely chopped
2 cloves garlic, crushed
2 teaspoons fresh ginger, finely chopped
1 tablespoon each garam masala, turmeric, ground cumin, ground coriander, curry powder
¼ teaspoon cayenne pepper
1 cup chicken stock
400g can chopped tomatoes
400g can chickpeas, drained and rinsed
Juice of 1 large lemon
½ cup natural unsweetened yoghurt

To serve

Natural unsweetened yoghurt
Fresh coriander, chopped
Steamed rice and warmed naan bread

METHOD

Preheat the oven to 150°C.

Lamb

Heat a dash of oil in a large frying pan over a high heat. Season the lamb and brown on both sides (this is best done in batches). Set the chops aside. Reduce the heat to medium and add the butter and another dash of oil to the same pan. Add the onion, garlic and ginger and cook, stirring, for about 5 minutes until the onion is soft. Add the spices and cayenne pepper and cook for another few minutes, stirring all the time so the spices don't stick and burn.

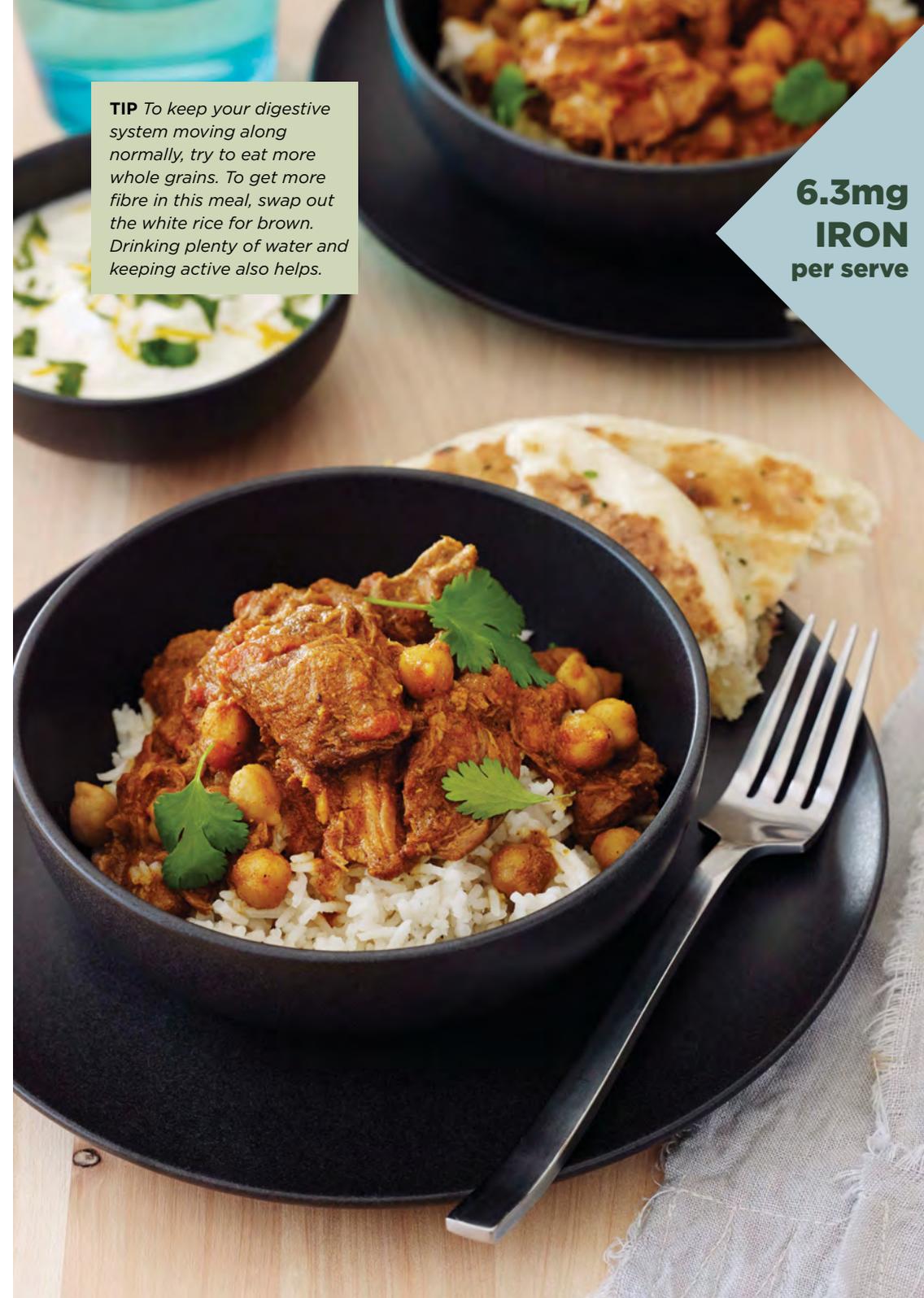
Add the stock to the pan, bring to the boil then immediately turn off the heat. Stir in the tomatoes, chickpeas, lemon juice, yoghurt and the lamb and its juices. Taste and season as required. If your pan is oven proof, cover tightly and cook in the oven for 3 hours or transfer everything to a covered casserole dish.

To serve

Before serving, you can remove the meat from the bones if you like so it's easier to eat. Serve the curry with steamed rice, a dollop of unsweetened yoghurt, fresh coriander and hot crispy naan bread.

TIP To keep your digestive system moving along normally, try to eat more whole grains. To get more fibre in this meal, swap out the white rice for brown. Drinking plenty of water and keeping active also helps.

**6.3mg
IRON
per serve**



Asian inspired Beef with Greens

Prep: 10 mins

Cook: 10 mins

Serves 4-6

INGREDIENTS

600g-700g Quality Mark beef rump steak, trimmed and thinly sliced
1 teaspoon sesame oil
1 red chilli, deseeded, finely chopped
3 cloves garlic, crushed
2 teaspoons ginger, finely grated
¼ cup hoisin sauce
¼ cup reduced salt soy sauce
2 teaspoons cornflour mixed with ½ cup beef stock
3 cups chopped green vegetables (Asian greens, broccoli, cabbage, spinach, celery etc.)

To serve

Cooked brown rice
½ cup roasted peanuts, roughly chopped
Fresh coriander
Extra chopped chillies (optional)

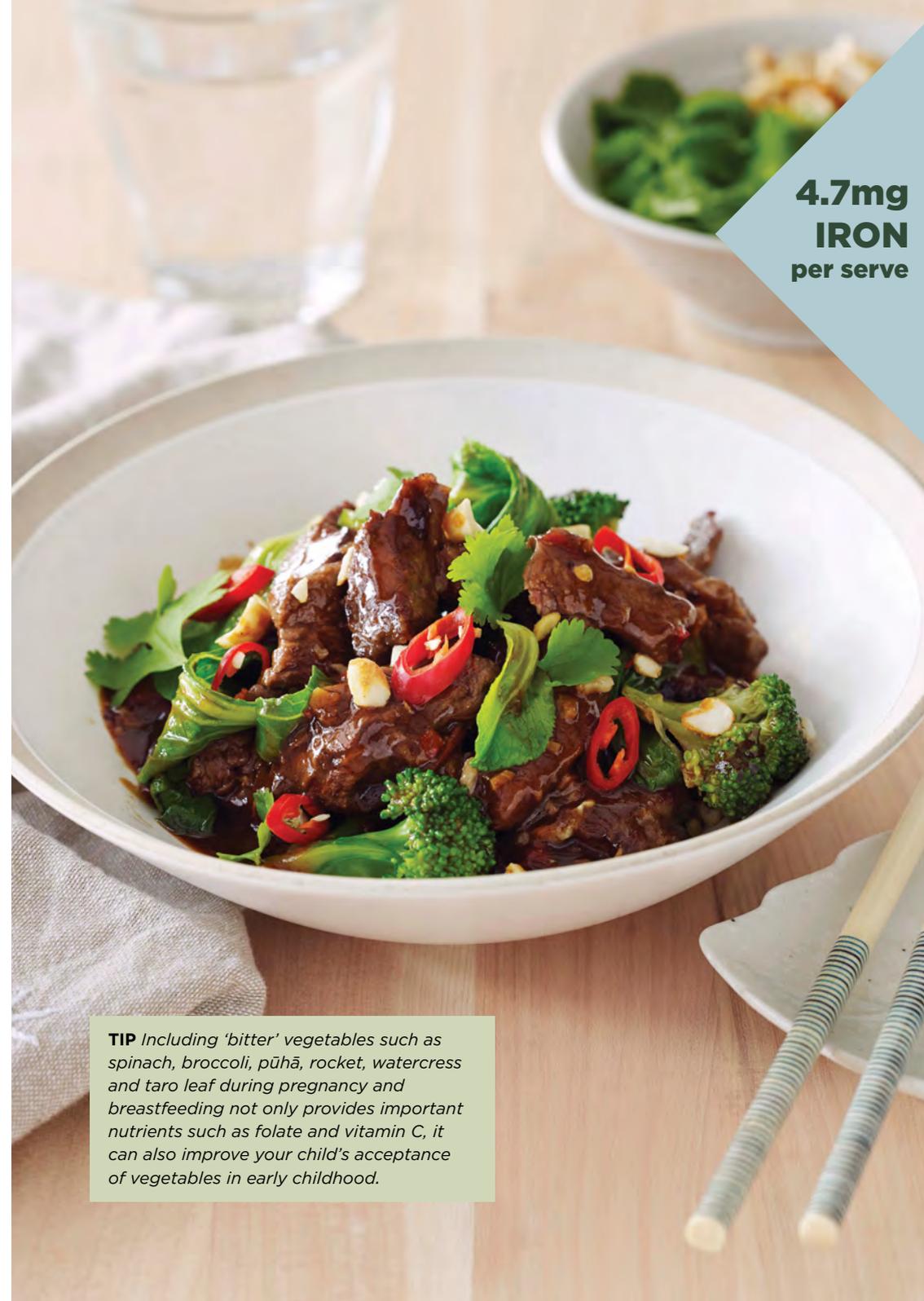
METHOD

Heat a dash of oil in a wok or large frying pan over a high heat. When the pan is very hot, add the beef and sear quickly to brown (do this in two batches to get a nice dark colour and avoid the meat stewing). Set the beef aside. Reduce the heat to medium, add the sesame oil, chilli, garlic and ginger and stir-fry for a few minutes. Add the hoisin sauce, soy sauce and stock/cornflour mixture and simmer for a few minutes until thickened. Turn the heat to high, add all the vegetables into the pan with the meat and its juices and stir-fry for another few minutes until the vegetables are bright green and just tender.

To serve

Serve immediately on brown rice with a sprinkle of peanuts, coriander and chillies.

4.7mg
IRON
per serve



TIP Including 'bitter' vegetables such as spinach, broccoli, pūhā, rocket, watercress and taro leaf during pregnancy and breastfeeding not only provides important nutrients such as folate and vitamin C, it can also improve your child's acceptance of vegetables in early childhood.

Polpettone

Prep: 15 mins

Cook: 25 mins

Serves 4

INGREDIENTS

Beef meatballs

500g Quality Mark beef mince
1 cup fresh white breadcrumbs
3 cloves garlic, crushed
1 egg, lightly beaten
3 tablespoons milk
1½ teaspoons Worcestershire sauce
1 teaspoon dried mixed herbs

Tomato Sauce

1 onion, finely chopped
2 cloves garlic, sliced
400g can chopped tomatoes in juice
1½ - 2 cups vegetable stock
1 tablespoon tomato paste
1 teaspoon sugar
1 bay leaf

To serve

½ cup freshly grated parmesan
½ cup roughly chopped parsley leaves

METHOD

Preheat the oven to 220°C.

Beef

Lightly oil a deep baking dish or skillet (one that will fit 8 meatballs comfortably in a single layer). Mix all meatball ingredients together well, then shape into 8 meatballs and place in prepared baking dish.

Tomato sauce

Place a dash of oil in a heavy based saucepan, over a low heat, and add the onion and garlic. Cook until the onion is soft, about 10 minutes. Add tomatoes, stock, tomato paste, sugar, bay leaf and season well. Simmer for 10 minutes to allow all the flavours to mingle and the liquid to reduce a little. Remove from the heat, cool for about 5 minutes, remove the bay leaf, then process in a food processor until you have a smooth sauce.

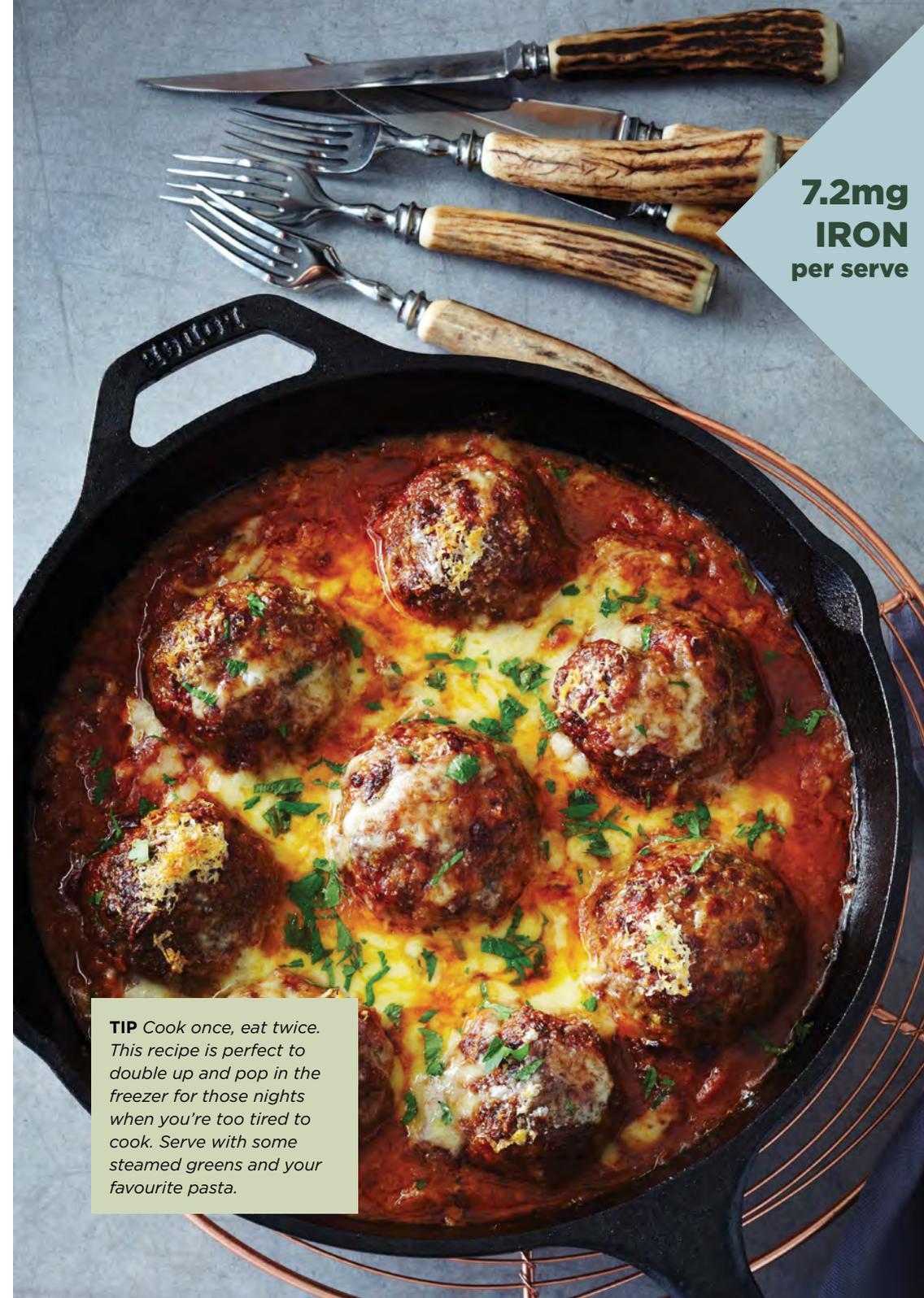
Beef

Pour sauce over the meatballs and cook in oven for 25 minutes turning meatballs once after 15 minutes.

To serve

Serve hot sprinkled with the Parmesan and chopped parsley.

7.2mg
IRON
per serve



TIP Cook once, eat twice. This recipe is perfect to double up and pop in the freezer for those nights when you're too tired to cook. Serve with some steamed greens and your favourite pasta.

Lamb Chops with Spinach & Pea Risotto

Prep: 20 mins

Cook: 25 mins

Serves 4

INGREDIENTS

Lamb

4 Quality Mark lamb loin chops

1 egg

¼ cup flour

½ cup fine dried breadcrumbs

2 tablespoons oil

Spinach and pea risotto

2 tablespoons oil

25g butter

1 small onion, finely sliced

2 cloves garlic, crushed

1½ cups risotto rice

800ml - 1 litre chicken stock, hot

300g spinach leaves, wilted
and chopped

2 cups frozen green peas

Lemon for squeezing

A few mint leaves, torn
or shredded

METHOD

Preheat the oven to 180°C.

Lamb

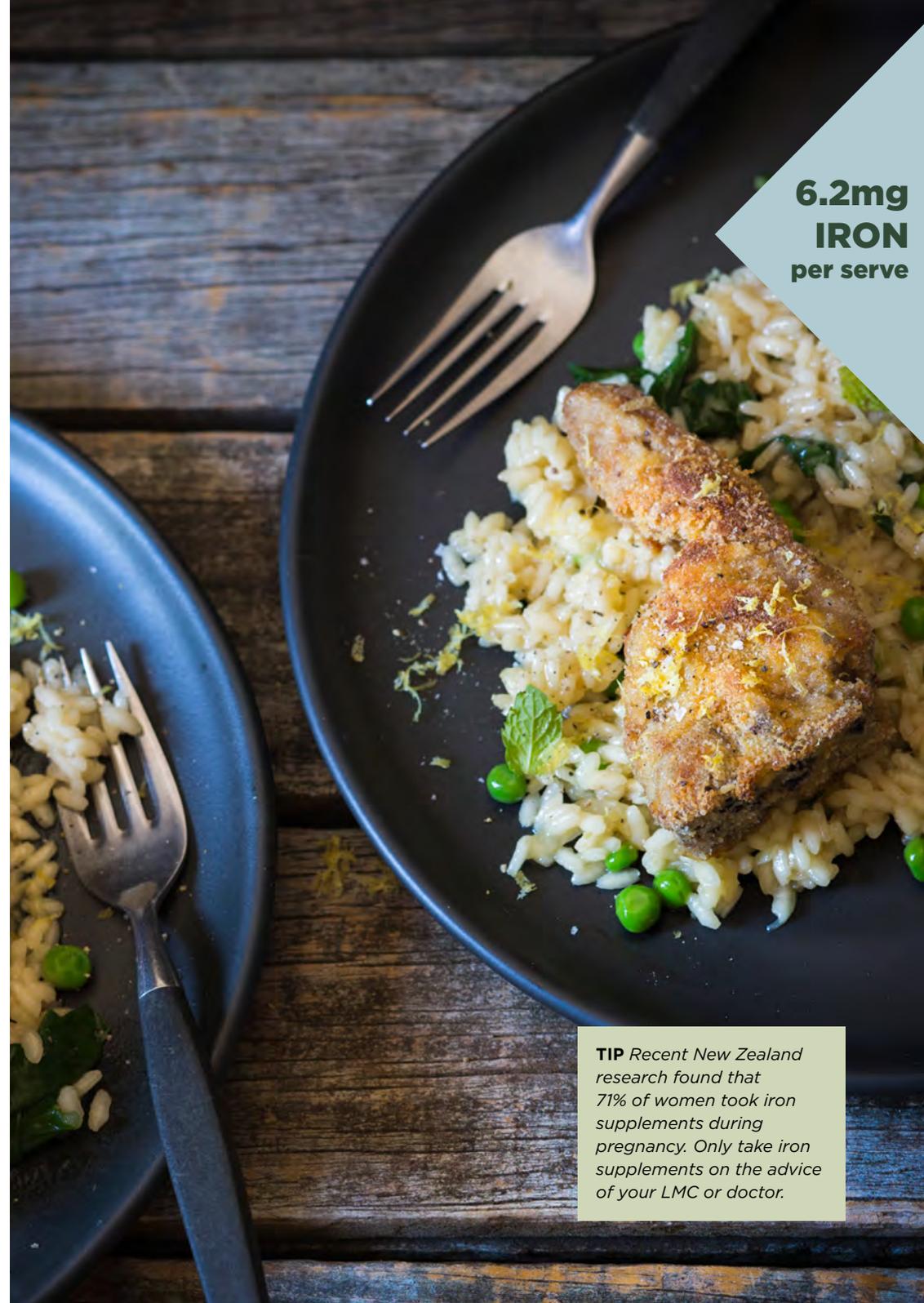
Line a shallow roasting dish with baking paper. Beat the egg in a shallow bowl and season. Place the flour on one plate and the breadcrumbs on another. Place one chop in the flour, dusting off excess, then dip in the egg and finally the breadcrumbs, pressing them on so the chop is well coated. Place in the roasting dish. Repeat with remaining chops. Drizzle with the oil, cover dish with foil and place in the oven to cook for 25 minutes. Remove the foil, turn chops over and return to the oven for a further 5 minutes.

Spinach and pea risotto

Heat the oil and butter in a heavy-based saucepan. Add the onion and garlic and cook over a low heat until they are soft but not coloured. Add the rice and stir until the rice is well coated with oil.

Add 1 cup of hot stock and stir. Allow the stock to be almost completely absorbed by the rice before adding a further 1 cup of stock. Continue adding stock and stirring frequently until the rice is almost cooked, about 20 minutes. Season and add the spinach and peas along with more stock and cook until the rice is tender and creamy, about 5 minutes.

Serve risotto in shallow bowls and top with a lamb loin chop. Squeeze over some lemon juice and sprinkle with mint.



6.2mg
IRON
per serve

TIP Recent New Zealand research found that 71% of women took iron supplements during pregnancy. Only take iron supplements on the advice of your LMC or doctor.

Nourishing Mexican Beef Bowl

Prep: 15 mins

Cook: 20 mins

Serves 4

INGREDIENTS

Beef

500g Quality Mark beef mince
1 medium onion, finely chopped
2 garlic cloves, crushed
1 carrot, grated
1 cup sweetcorn kernels, frozen,
boiled, drained, no salt added
2 teaspoons cumin
1 teaspoon smoked paprika
½ teaspoon chilli flakes (optional)
400g canned chopped tomatoes
1 tablespoon tomato paste

To Serve

2 packets precooked brown rice
and quinoa
250g cherry tomatoes, halved
400g can black beans
1 yellow capsicum, sliced
1 avocado, mashed
1 red chilli, sliced (optional)
Corn chips
Lime
Fresh coriander
Chipotle mayonnaise (optional)

METHOD

Beef

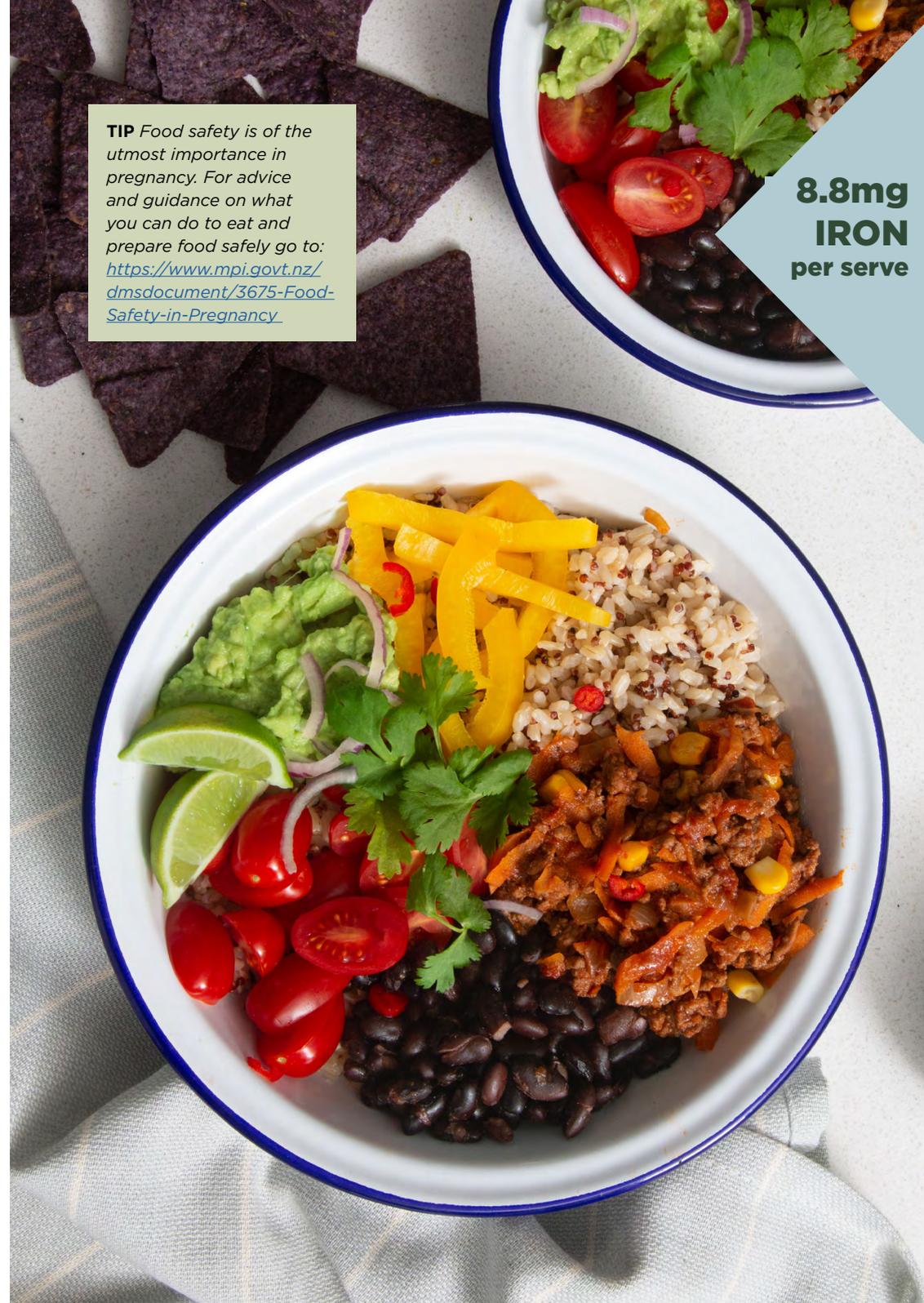
Heat a dash of oil in a large heavy-based saucepan over medium-high heat. Add the onion and cook until translucent. Add garlic and spices and cook until fragrant, approximately 30 seconds. Add mince and brown, stirring to break up. Once the mince has browned add the tinned tomatoes, tomato paste and carrot. Stir through until well combined and bring to a gentle simmer. Lower the heat and add the corn. Season to taste and leave to simmer for 15 minutes. You can cover with a lid to prevent the mixture drying out.

To serve

Divide the mince into four serving bowls with the cooked brown rice and quinoa mix (heated according to the packet instructions), chopped cherry tomatoes, black beans (rinsed under cold water and drained), capsicum and mashed avocado. Top with coriander and sliced red chilli, and drizzle with chipotle mayo for an extra flavour burst. Serve alongside corn chips for dipping into the mince and lime wedges for extra flavour.

TIP Food safety is of the utmost importance in pregnancy. For advice and guidance on what you can do to eat and prepare food safely go to: <https://www.mpi.govt.nz/dmsdocument/3675-Food-Safety-in-Pregnancy>

**8.8mg
IRON
per serve**





BEEF + LAMB NEW ZEALAND

The information in this booklet should not to be taken as a substitute for medical advice from your Lead Maternity Carer, Obstetrician or GP in relation to specific symptoms or health concerns.

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