

## Nutrition in chronic liver disease

The liver has many roles within the body. One role is to store and release glycogen, a chemical which is used to provide energy. When the liver is not working properly its ability to store and release glycogen (i.e. energy) decreases. Therefore, the body must use other energy sources such as protein (e.g. muscle) and fat stores.

### **Preventing weight loss**

Chronic liver disease is often associated with muscle and body fat loss. This may be difficult to detect because of fluid retention. For example, you may be losing muscle, but if you are retaining fluid you may stay the same weight.

A high protein diet is important for people with chronic liver disease as the protein is used to maintain muscles and body tissues (including the liver) and to keep the body working normally.

Historically, it was recommended that people with liver disease need to avoid protein-rich foods to help prevent a condition called hepatic encephalopathy. However, new research shows this is not the case. Hepatic encephalopathy is

treated by medications and avoiding protein will only make you more malnourished.

To help prevent muscle and fat loss, you need to eat foods high in energy and protein.

### **Ideas to increase the protein and energy in your diet:**

- Eat 6-8 smaller meals and snacks throughout the day rather than 3 large meals, particularly if you have a small appetite or feel full quickly.
- Use extra oil in cooking, frying and baking and onto vegies and salads.
- Add eggs, legumes, yoghurt or low-salt cheese to your meat dishes or salads.
- Have an energy-rich snack just before bed.
- Replace tea, coffee or water with fluids that provide energy (such as milk, juice, cordial or soft drink).

Milk is a great base for nourishing drinks as it is high in protein and energy. Full cream milk contains more kilojoules than low-fat milk so is preferable to use. Fortified soymilk (e.g. *So Good*) is also

suitable. To make your milk higher in protein and calories, add other ingredients such as instant milk powder or ice cream and a variety of flavourings.

To increase your energy and protein intake, include at least one food from each of the following columns at each meal or snack (see page 3). The amount of energy and protein required over the day differs from person to person. If you wish to know more about the amount of energy or protein you need please talk to your dietitian.

The liver plays an essential role in supplying energy (in the form of glycogen) to the body while you are not eating overnight. When you have liver disease this becomes harder to do and can result in the body having to use protein (e.g. muscle). Carbohydrate is the best type of energy. Examples of carbohydrate sources include breads and cereals, rice, pasta, fruit, milk and yoghurt.

Some pre-bed snack ideas include:

- 2 thick slices of bread with sweet spread (e.g. honey, jam)
- 2 thick slices of raisin bread/toast
- Glass of milk with milo and slice of bread/toast

- Muffin, cake or thick slice of banana bread
- 2 crumpets with honey
- Muesli bar and fruit smoothie
- Yoghurt/custard/ice cream with fruit and honey
- Creamed rice/rice pudding with fruit/honey
- High energy supplement drink (e.g. *Sustagen, Ensure*)

There are a number of special nutritional supplements that may be able to increase your calorie and protein intake. Talk to your dietitian about these, if required.

**Note:** If you are overweight you should focus on having a high protein intake and limit fatty and sweet foods. Sometimes people with liver disease require a low-fat diet. If your doctor recommends a low-fat diet or if you are diabetic, see your dietitian for information.

High energy foods lower in salt	High protein foods lower in salt
<ul style="list-style-type: none"> <li>• rolled oats, wheat or oat bran</li> <li>• pasta, rice, noodles</li> <li>• potato, sweet potato, corn, avocado</li> <li>• unsalted butter/margarine, olive oil, sunflower oil, canola oil</li> <li>• cream, mayonnaise</li> <li>• jam, honey, golden syrup, ice cream</li> <li>• fruit, dried fruit and fruit juice</li> <li>• sugar and sugary products including soft drinks</li> </ul>	<ul style="list-style-type: none"> <li>• milk, milk powder and soy milk</li> <li>• cheese: Swiss, ricotta, bocconcini, cottage</li> <li>• yoghurt, custard</li> <li>• meat, chicken, pork, lamb, fresh fish</li> <li>• tinned fish in spring water/oil</li> <li>• eggs</li> <li>• unsalted nuts and seeds (including pastes)</li> <li>• dried legumes (lentils, chickpeas, kidney beans, soup mixes)</li> </ul>
High energy foods high in salt	High protein foods high in salt
<ul style="list-style-type: none"> <li>• breakfast cereals</li> <li>• packet rice, pasta and instant noodles with flavouring</li> <li>• bread and bread products</li> <li>• pastries</li> <li>• cakes, biscuits and savoury crackers</li> <li>• potato chips</li> <li>• most takeaway and fast foods</li> </ul>	<ul style="list-style-type: none"> <li>• cheese: hard cheese, fetta, brie, camembert</li> <li>• cured or preserved meats e.g. ham, bacon, salami and other deli meats</li> <li>• prawns, oysters and other shellfish</li> <li>• tinned fish in brine or flavoured</li> <li>• tinned legumes (baked beans, lentils, chickpeas)</li> </ul>

**Note: If you have been advised to follow a low salt diet, choose foods lower in salt from the table and refer to the low salt information on the following pages.**

### Vitamins and Minerals

The changes that occur in chronic liver disease can lead to vitamin and/or mineral deficiencies. Problems such as excessive bleeding, osteoporosis, anaemia and night blindness can occur if vitamin and/or mineral levels are too low.

Eating a variety of foods can help to avoid deficiencies. However, your doctor may still recommend a vitamin and mineral supplement if required. Avoid taking any supplements or following diets not recommended by your doctor or dietitian.

### Fluid and Salt

As liver disease progresses, excess fluid can build up around your stomach (ascites) and in the feet and legs (oedema). If this occurs it becomes very important to limit the amount of salt (sodium) you consume.

Because salt acts like a sponge with fluid in your body, by reducing the amount of salt you eat you can limit the amount of fluid that stays in your body. If you have ascites, your doctor and dietitian will recommend you follow a low salt diet.

## Hints to reduce salt

1. Do not add salt at the table or in cooking.
2. Choose low salt foods.
3. Count your salt.

Also, try....

- Slowly cutting down your salt intake to allow your taste buds to adjust. It can take up to 4-6 weeks for your taste buds to adjust to a low salt diet.
- Tasting food before adding salt or salty sauces.

### 1. Do not add salt at the table or in cooking.

What to use instead:

- freshly ground pepper, dry mustard powder
- lemon juice, lime juice, vinegar
- fresh or dried herbs - basil, oregano, mint, rosemary, thyme, parsley, chives, sage, tarragon
- garlic, curry, chilli, onion, fresh ginger, spring onions
- spices - cinnamon, nutmeg, cardamom, ginger, cumin

Flavour combinations to try:

- pork - garlic, lemon rind, coriander, apple sauce, ginger, mustard
- beef - bay leaf, thyme, mustard, sage
- lamb - mint, ginger, currant jelly, paprika, oregano, rosemary, garlic

- chicken - sage, tarragon, garlic, chilli
- fish (fresh) - lemon juice, lemon pepper, lime juice, chives, parsley, vinegar
- tomato - basil, garlic, black pepper, parsley, oregano
- potato - chives, paprika, mint, parsley, black pepper
- carrots - ginger, cinnamon, honey, parsley

Other products such as sea salt, chicken salt, vegetable salt, celery salt, pink salt, lemon pepper, herb salt and salt substitutes (e.g. 'lite' salt) can still contain high levels of sodium. Check the nutrition panel and ingredients.

### 2. Choose low salt foods

Most sodium (75%) comes from processed foods. When shopping, buy fresh, unprocessed or frozen foods. Also choose foods labelled "low salt" or "no added salt". Some foods labelled "reduced salt" can still contain high levels of sodium. Check the nutrition panel – sodium (Na) content **less than 120mg per 100g serve** is considered low salt. Sodium content **less than 400mg per 100g serve** is considered reduced salt.

**Serving size**

This is the average serving size determined by the manufacturer. This may not be the same as the serving size you consume.

**Per 100g**

100g is a useful standard to compare products. Use this to compare various brands of the same food/drink.

**Nutrition Information**

Servings per package: 1  
Serving Size: 35g

	Per Serve	Per 100g
Energy	510kJ	1430kJ
Protein	3.5g	10g
Fat	0.4g	1g
Saturated Fat	0.2g	0.5g
Carbohydrate		
Total	25.3g	72.2g
Sugar	7.5g	21.5g
Fibre	3.4g	9.7g
Sodium	185mg	535mg

**Sodium (salt)**

- Aim for 120mg per 100g or less
- Avoid foods that contain more than 400mg per 100g

<b>FOOD GROUP</b>	<b>Lower Salt - CHOOSE</b>	<b>High Salt - AVOID</b>
<b>Bread and cereals</b>  <i>Often high in salt</i>	<ul style="list-style-type: none"> <li>• salt reduced bread</li> <li>• fresh and dried pasta</li> <li>• salt reduced and low salt crackers and biscuits e.g. plain rice/corn cakes, <i>Peckish</i> rice crackers, <i>Ryvitas</i></li> <li>• rolled oats, porridge</li> <li>• <i>Weet-Bix</i>, <i>Sustain</i>, muesli, <i>Just Right</i>, puffed wheat, oat or wheat bran</li> <li>• rice (plain)</li> <li>• plain flour &amp; cornflour</li> </ul>	<ul style="list-style-type: none"> <li>• savoury crackers</li> <li>• sweet biscuits &amp; shortbread</li> <li>• croissants, pastry, cakes, scones, muffins</li> <li>• bread, bread rolls, savoury breads</li> <li>• packet rice &amp; pasta with flavouring, instant noodles, tinned spaghetti</li> <li>• breakfast cereals with more than 400mg sodium per 100g e.g. <i>Cornflakes</i>, <i>Rice Bubbles</i></li> </ul>
<b>Fruit</b>	<ul style="list-style-type: none"> <li>• fresh/tinned/frozen fruit</li> <li>• dried fruit</li> <li>• fruit juices</li> </ul>	<ul style="list-style-type: none"> <li>• canned plums</li> </ul>
<b>Vegetables</b>	<ul style="list-style-type: none"> <li>• all fresh and frozen vegetables</li> <li>• dried legumes (lentils, chickpeas, soup mix, soybeans, kidney beans)</li> <li>• 'no added salt' canned vegetables and beans</li> </ul>	<ul style="list-style-type: none"> <li>• pickled and canned vegetables and legumes</li> <li>• tomato or vegetable juice</li> <li>• baked beans or reduced salt baked beans</li> <li>• olives, gherkins</li> </ul>
<b>Milk, yoghurt and cheese</b>	<ul style="list-style-type: none"> <li>• milk – all types</li> <li>• yoghurt</li> <li>• custard, dairy desserts, ice cream</li> <li>• cheese: cottage, ricotta, continental (quark), bocconcini, Swiss</li> </ul>	<ul style="list-style-type: none"> <li>• cheese: cheddar, cream, brie, camembert, feta, parmesan, including reduced salt cheeses</li> <li>• cheese spreads and dips</li> </ul>
<b>Meat, fish, chicken, eggs</b>	<ul style="list-style-type: none"> <li>• fresh, unprocessed meat (lamb, beef, veal, pork, kangaroo, chicken, turkey, fish)</li> <li>• eggs</li> <li>• tinned fish in spring water</li> </ul>	<ul style="list-style-type: none"> <li>• cured, smoked, canned or salted meat e.g. corned beef, ham, bacon, sausages, salami, brawn, pate, frankfurts</li> <li>• meat pies, sausage rolls, fish fingers, crumbed/battered fish, hamburgers, BBQ chicken, pizza, chicken nuggets, Chinese</li> <li>• shellfish e.g. prawns, lobster, crab, oysters</li> <li>• flavoured tinned fish or in brine</li> </ul>
<b>Fats</b>	<ul style="list-style-type: none"> <li>• unsalted butter, oil and avocado</li> <li>• no added salt (e.g. <i>BeceI</i>) or reduced salt (<i>Gold'n Canola</i>, <i>Flora</i>) margarine</li> <li>• no added salt peanut butter</li> </ul>	<ul style="list-style-type: none"> <li>• butter</li> <li>• margarine</li> <li>• peanut butter</li> </ul>

FOOD GROUP	Lower Salt - CHOOSE	High Salt - AVOID
Drinks, snacks and extras	<ul style="list-style-type: none"> <li>• cordial, soft drink</li> <li>• homemade unsalted soups</li> <li>• <i>Milo</i>, tea, coffee</li> <li>• unsalted nuts &amp; seeds</li> <li>• jam, honey, syrup</li> <li>• unsalted popcorn</li> <li>• plain chocolate</li> <li>• plain lollies</li> </ul>	<ul style="list-style-type: none"> <li>• sports drinks</li> <li>• soup, <i>Bonox</i></li> <li>• tomato juice, vegetable juice</li> <li>• clear aspirin or <i>Panadol</i> effervescent drinks e.g. <i>Alka-Seltzer</i>, <i>Eno</i> and effervescent vitamins e.g. <i>Berocca</i></li> <li>• dips, olives, marinated &amp; pickled foods</li> <li>• most sauces - tomato sauce, tartare sauce, BBQ sauce, teriyaki, soy sauce (even reduced salt), Worcestershire sauce, cheese sauce</li> <li>• <i>Gravox</i>, gravy, stock cubes</li> <li>• <i>Vegemite</i>, meat &amp; fish paste</li> <li>• salted nuts and snacks</li> <li>• crisps, pretzels</li> <li>• mustard, pickles, relish</li> <li>• some lollies/sweets (liquorice, sour lollies, honeycomb)</li> </ul>

### 3. Count your salt

Check the nutrition information panel for an accurate measure of sodium per serve, and aim to have **less than 2000mg of sodium each day**.

In some cases, a limit of 1400mg daily may be needed. Any food with **more than 400mg sodium per 100g serve** should be limited. The table below (page 8) provides a general guide.

useful for comparing between products include Calorie King Australia and FoodSwitch. Calorie King Australia provides you with the opportunity to look for specific food items and look at their nutritional value. FoodSwitch has a specific filter 'SaltSwitch'. This app provides you with lower salt alternatives if available.

### Phone apps

Phone apps can be useful to help track the amount of salt that you consume over the day. One example is Easy Diet Diary. This app will allow you to record the food/drink that you are consuming by using the food database or by scanning barcodes. Phone apps that could be

FOOD	mg sodium	FOOD	mg sodium
<b>Breads and cereals</b>		ham, 2 thin slices (60g)	950
bread, 1 slice	150	bacon, 1 rasher (20g)	650
crumpet, 1	290	sausage, 1 thick	650
<i>Uncle Toby's</i> shredded wheat, porridge, muesli, <i>Kellogg's Just Right</i> , small bowl	0 - 120	meat pie, 1	900
<i>Cornflakes, Nutri-Grain, Weet-Bix</i> , small bowl	200 - 320	sausage roll, average 80g	600
rice or pasta, 1 cup	0	hamburger, average	1000
crackers, 2-3	100	pizza, ¼ medium	1200
plain flour, 100g	4	chicken nuggets, 6	630
self-raising flour, 100g*	850	tinned fish in brine, 100g	300 - 500
<b>Fruit</b>		<b>Fats, drinks, snacks and extras</b>	
fresh, dried, canned fruit	0	butter/margarine – no added salt, 1 teaspoon	10
<b>Vegetables</b>		butter/margarine, 1 teaspoon	60
fresh or frozen veg, ½ cup	10	unsalted nuts, 50g	5
tinned vegetables (peas, corn, etc.), ½ cup	150	sports drink, 500mL	200
baked beans, ½ cup	570	cup of soup, 1	650
<b>Milk, yoghurt and cheese</b>		<i>Berocca</i> , 1 tablet	285
cheese, 1 slice (30g)	200	tomato sauce, 20mL	200
cottage/ricotta cheese, 30g	60	mayonnaise/dressing, 20mL	250
milk, 1 glass	100	salted nuts, 50g	210
yoghurt, small tub	120	potato crisps, 50g packet	450
<b>Meat, fish, chicken, eggs</b>		salt sachet (0.1g)	40
fresh chicken, 100g	60	scone, 1	200
fresh beef, lamb, pork, 100g	40 - 60	sweet biscuits, 2	100 - 150
egg, 1 large	70	cake, 1 piece	150 - 200
tinned fish in spring water, 100g	200 - 400	3 pinches salt (1g each)	1200

\* Note: Self-raising flour is made from combining plain flour with a rising agent and salt.



## Suggested meal plan

<b>BREAKFAST</b> ½ cup rolled oats or muesli with full cream milk with sugar or honey or cream <b>Or</b> 2 slices salt reduced bread with 2 eggs, tomato and unsalted butter or avocado <b>Plus</b> Yoghurt or fruit
<b>MORNING TEA</b> Raw, unsalted nuts Milk-based drink (e.g. milkshake)
<b>LUNCH</b> 2 slices salt reduced bread <b>or</b> 1 reduced salt flatbread With salad, avocado and fresh meat <b>Plus</b> Yoghurt or dairy dessert or fruit
<b>AFTERNOON TEA</b> Reduced salt rice crackers with ricotta cheese or cottage cheese
<b>DINNER</b> 100-120g lean meat, chicken or fish (fresh) <b>Plus</b> 1 cup plain pasta <b>or</b> 2/3 cups rice <b>or</b> mashed potato (using unsalted butter/margarine) <b>Plus</b> vegetables – roasted or stir-fried with olive, canola, safflower or sunflower oils
<b>SUPPER</b> Dairy-based dessert (e.g. rice pudding) and a piece of fruit

## Things I can do to improve my management of chronic liver disease:

1.

---

2.

---

3.

---

***For information contact your Dietitian or Nutritionist:***

---

Phone: \_\_\_\_\_