












	AUTHORIZED	WITH MODERATION	EXCEPTIONALLY	TO AVOID
	<b>&lt; 0,30 mg of copper/100mg</b>	<b>0,30 to 1 mg of copper/100g</b>	<b>1 to 3 mg of copper/100g</b>	<b>≥ 3 mg of copper:100g</b>
 <b>GROUPS</b>	<b>&lt; 0,30 mg of copper/100mg</b>	<b>0,30 to 1 mg of copper/100g</b>	<b>1 to 3 mg of copper/100g</b>	<b>≥ 3 mg of copper:100g</b>
 <b>BEVERAGES</b>	<ul style="list-style-type: none"> <li>• <b>All sparkling and mineral waters</b> (Contrex®, Volvic®, Evian®)</li> <li>• <b>Sodas:</b> Ex: Coca Cola®, Limonade, Schweppes® (*0,00mg/100ml)</li> <li>• <b>Fruit juices and nectars:</b> Ex: orange, peach, apricot nectar U® (*0,24mg/l), Carrefour® organic orange juice (*0,25 mg/l), Granini® (1l) strawberry juice (30%) (*0,12mg/l)</li> <li>• <b>Coffee and tea:</b> Ex: powder for cappuccino coffee (*0,01mg/100g), Lipton® herbal tea (*0,002 to 0,004mg/1 cup of 150 ml)</li> <li>• <b>Chocolate beverages:</b> Ovomaltine® (*0,14mg/1 tablespoon = 20 g), Nesquick® (*0,20mg/1 tablespoon = 20 g)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Fruit juices and nectars:</b> Réa® grapefruit juice (*0,48mg/l)</li> <li>• <b>Chocolate beverages:</b> Poulain® chocolate powder (*0,41mg/1 tablespoon = 20g)</li> </ul>		<ul style="list-style-type: none"> <li>• <b>Chocolate beverages:</b> Van Houten® cocoa (*4,8mg/100g)</li> </ul>
 <b>MEATS, CURED MEATS &amp; OFFALS</b>	<ul style="list-style-type: none"> <li>• All fresh, frozen, or canned meats, all poultries except duck, all game birds, rabbit</li> <li>• Cured meats: salami, sausages...</li> </ul>	<ul style="list-style-type: none"> <li>• Duck (0,46mg/150g)</li> <li>• Kidneys (0,68mg/100g), heart (*0,33mg to 0,66mg/100g)</li> <li>• Duck liver pate (*0,38 mg/100g)</li> </ul>	<ul style="list-style-type: none"> <li>• Pork liver (2,5 mg/100g), poultry gizzards (*1,15 mg/100g)</li> <li>• Poultry liver paste</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Livers:</b> veal (*from 13 to 18mg/100g), lamb (20,4mg/100g), poultry (*6,4mg/100g), beef (3,75mg/100g)</li> </ul>
 <b>SEAFOOD</b>	<ul style="list-style-type: none"> <li>• Lean and fatty fish, shrimps (*0,25mg/1 handful = 100g), smoked salmon (*0,05mg/2 slices = 80g), canned natural tuna (*0,03mg to 0,07mg/100g), sardines in oil (*0,20mg/100g)</li> </ul>	<ul style="list-style-type: none"> <li>• Calamari (0,52mg/100g), mussels (0,40mg/200g), small lobsters (0,85mg/3 small lobsters = 100g)</li> </ul>	<ul style="list-style-type: none"> <li>• Crayfish (2mg/100g), crab (1,8 mg/100g), periwinkles (1,7mg/2 handfuls = 100g edible), lobster (1,35mg/100g)</li> </ul>	<ul style="list-style-type: none"> <li>• Scallops (10mg/3 = 100g), clams (6,1mg/120g), common welks (6mg/100g), oysters (4mg/6 to 10 oysters)</li> </ul>
 <b>EGGS</b>	<ul style="list-style-type: none"> <li>• They are all authorized in all forms</li> </ul>			
 <b>VEGETABLES &amp; DRIED VEGETABLES</b>	<ul style="list-style-type: none"> <li>• <b>All green vegetables: fresh, natural frozen, canned:</b> Ex: fresh brocolis (*0,18mg/200g), fresh green beans (*0,26mg/200g), canned green beans (*0,16mg/200g), field peas (*0,30mg/200g), canned corn (*0,05mg/100g), carrots (*0,04mg/100g), tomatoes (*0,02 to 0,15mg/100g), tomato sauce (*0,08mg/20 cl carton), parsley (*0,07mg/100g)</li> </ul>	<ul style="list-style-type: none"> <li>• Fresh mushrooms (0,4mg/100g), cooked soya (0,32 mg/100g)</li> <li>• Canned lentils (*0,60mg/200g)</li> <li>• Cooked lentils (0,66mg/200g)</li> </ul>		
 <b>BREAD &amp; STARCHES</b>	<ul style="list-style-type: none"> <li>• Pasta, semolina, rice (except whole rice)</li> <li>• <b>Potatoes:</b> Ex: French fries (0,11mg/100g), chips (*0,026mg/10 chips, i.e. 23g)</li> <li>• <b>Bread:</b> Ex: White bread (*0,13mg/100g)</li> </ul>	<ul style="list-style-type: none"> <li>• Whole rice (*0,38mg/200g)</li> </ul>		
 <b>FRUITS &amp; DRIED FRUITS</b>	<ul style="list-style-type: none"> <li>• All authorized: fresh, canned, natural, frozen: ex: fresh grapefruits (0,39mg/100g), fig (0,15mg/1 fig), average banana (0,15mg/banana), fresh blackberries (*0,10mg/100g), canned pineapple (*0,05mg/100g), fresh mango from Peru (*0,03mg/100g)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Dried fruits:</b> dried prunes (*0,33mg/5 prunes = 100g), nuts (0,44mg/10 nuts or 1,34mg/100g), coconut (0,56mg/100g), pistachios (*0,66mg/about 66 pistachios = 100g), peanut butter (0,70mg/100g or 0,07mg/1 teaspoon), almond paste (0,50mg/100g)</li> <li>• <b>Fresh fruits:</b> currants (0,81mg/100g)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Dried fruits:</b> sunflower seeds (2,27 mg/100g), cashews (2mg/3 handfuls = 100g), Brazil nuts (1,76mg/25 nuts = 100g), sesame seeds (1,46mg/100g), pine nuts (1,32 mg/3 handfuls = 100g), hazelnuts (1,2 mg/about 65 hazelnuts = 100g), pecan nuts (1,07mg/3 handfuls = 100g), almonds (0,50 mg/50g), peanuts (1,02mg/3 handfuls = 100g)</li> </ul>	
 <b>DAIRY PRODUCTS</b>	<ul style="list-style-type: none"> <li>• Whole, half-skimmed, skimmed, liquid, concentrated, fresh, pasteurized, powder, UHT sterilized milk, soya-based dairy products, yoghurts, cottage cheese...</li> <li>• All cheeses except parmesan: Ex: La vache qui rit (*0,00mg/serving), Tenery cheese for toasted sandwiches (*0,00mg/slice).</li> </ul>	<ul style="list-style-type: none"> <li>• Parmesan (0,34mg/40g)</li> </ul>		
 <b>SUGAR, DESSERTS &amp; SUGAR-BASED PRODUCTS</b>	<ul style="list-style-type: none"> <li>• <b>Chocolate:</b> Ex: white chocolate, milk chocolate (0,02mg/100g), Lindt Pyrénéens® milk chocolate (*0,019mg/1 chocolate = 7g), Ferrero Rocher® (0,080mg/1chocolate = 12,5g), <b>Chocolate bars:</b> Ex: Mars® (*0,07mg/1 bar = 50g), Milky Way® (0,03mg/1 bar), <b>Chocolate desserts:</b> Ex: milk chocolate pudding (0,08g/pot), industriel milk chocolate mousse (0,07mg/1 pot), chocolate Dany® (*0,13mg/pot), chocolate and hazelnut sundae (0,05mg/100g), <b>Chocolate breakfast cereals:</b> Ex: Choco pops® (*0,21 mg/60g)</li> <li>• <b>Pastries, Viennese pastries, cakes</b> without chocolate or with milk chocolate for homemade cakes.</li> <li>• <b>Ice creams and sorbets</b> without chocolate</li> <li>• <b>Compotes, jams</b> for example: Vergers gourmand® apples-strawberries compote (*0,04mg/100g), strawberry jam (*0,03mg/100g), Carrefour® currant jelly (*0,02mg/100g), Valade® currant jelly (*0,03mg/100g), chestnut cream (*0,10mg/100g), apple compote (*0,04mg/100g)</li> <li>• <b>Other desserts:</b> pudding (except chocolate), Nestlé® semolina pudding (*0,01mg/100g), mix for egg custard (*0,01mg/100g)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Chocolate:</b> Crunch® (*0,45mg/100g), Nutella® (*0,60mg/100g i.e. 7 teaspoons, <b>Chocolate bars:</b> Ex: Bounty® (0,26mg/1 bar), Snickers® (0,24mg/1 bar), Kit Kat® (0,13mg/1 pack of 4 bars), Smarties® (0,1mg/1 pack = 40g), Twix® (*0,22mg/1 pack of 2 bars), Milka® chocolate bar (*0,10mg/1 bar of 30g), <b>Chocolate desserts:</b> Ex: chocolate profiteroles (0,18mg/100g)</li> <li>• <b>Pastries, Viennese pastries, cakes:</b> ginger bread (*0,5mg/50g i.e. 2 slices), breakfast wheat pops cereals (0,33mg/60g), Favorini® hazelnut wafers (*0,39mg/100g = 4 wafers)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Chocolate:</b> black (0,65mg/2 squares, Côte d'Or® black chocolate 70% (*0,27mg/2 squares)</li> <li>• <b>Chocolate Viennese pastries:</b> Ex: chocolate roll</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Chocolate:</b> Van Houten® cocoa (*4,81mg/100g) (a maximum of 10g of cocoa can be used in a mix)</li> </ul>
 <b>FATS</b>	<ul style="list-style-type: none"> <li>• <b>All oils, butter, margarine, sour cream</b></li> </ul>			

A NORMAL DIET BRINGS ABOUT  
3 MG OF COPPER PER DAY

In the Wilson's disease, the experts advise to **reduce the food intake:**

to less than 1 mg per day at the beginning of the treatment

#### PRACTICAL ADVICE

- The green column foods are authorized.
- The yellow column foods must be eaten with moderation, knowing that a day of meals only made of authorized foods (green column) brings about 0,80 mg of copper.
- The orange and red columns foods must be avoided.

to less than 3 mg per day when the disease is stable

#### PRACTICAL ADVICE

- The green column foods are authorized.
- The yellow column foods can be eaten more freely.
- The green column foods must be eaten only exceptionally.
- The red column foods must be avoided.

#### Alcohol

Drinking alcohol is not recommended because it can reach the liver.

#### Water

**Drinkable water:** can contain copper.

You must check the composition with the service in charge of water supply in your city hall (Standard: < 1 mg per liter)

**Spring water:** the copper content may vary (Standard: < 1 mg per liter)

## FOODS TO AVOID OR TO CONSUME EXCEPTIONALLY BECAUSE THEY ARE VERY RICH IN COPPER:

■ **All livers** (ex: a slice of veal liver can contain up to 18 mg of copper)

■ **Black chocolate:** the copper content of chocolate food stuffs depends on the percentage of cocoa. The higher the percentage of cocoa is, the higher the copper content of the product will be

- ▶ cocoa powder and black chocolate (more than 60% of cocoa) are not recommended.

■ **Some fish and shellfish** (see table)

■ **Peanuts, almonds, hazelnuts and nuts**

■ **Alcohol:** because it can reach the liver



## PARTICULAR ASPECTS

#### NUTRITIONAL SUPPLEMENTS:

If you have difficulties to eat, an appetite or weight loss, your doctor can prescribe you oral nutritional supplements. Be careful, some supplements are rich in copper. A list with the contents is available on the website:

<http://cnrwilson.fr>

#### IN CASE OF LIVER FAILURE:

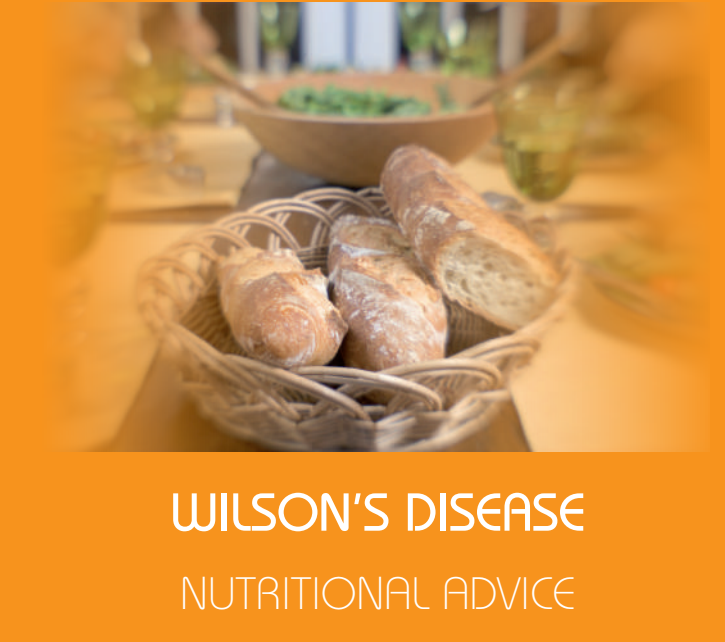
Proteins and salt intake is limited, according to your doctor's advice.

#### AFTER A LIVER TRANSPLANT:

You can go back to a normal diet gradually.

Document produced by the Wilson NCR, Lariboisière Hospital-Fernand Widal, the dietary department (Estelle Garcin & Charlotte Henrio), the toxicology laboratory (Dr Joël Poupon & Souleiman El Balkhi), the patients' association "Bernard Pépin for the Wilson's disease")

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## WILSON'S DISEASE NUTRITIONAL ADVICE

National Centre of Reference Wilson's disease

Lariboisière Hospital Group – Fernand Widal

Dietary Department

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Website: <http://cnrwilson.fr>

The recommendations of this booklet shall allow you to create adapted menus. Don't hesitate to contact the doctors or dieticians of the Wilson NCR if you need additional information.

This document is a translation of the French version, it has been prepared with the help of Orphan Europe.

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Wilson's disease is a genetic disorder leading to an abnormal accumulation of copper in different body organs, mainly the liver, the brain and the eye.

It is a disease for which we have efficient treatments allowing eliminating this excess copper from the body. This treatment combines drugs (D-Penicilamine, TRIENTINE, WILZIN) that must be taken throughout the life continuously, and a low copper diet.

The goal of this booklet is to provide you with advice to limit the quantity of copper in your food intake while respecting the **nutritional balance**.

The different foods (milk, meat, fish, vegetables, fruits, beverages...) are presented according to their copper content.

<b>Green column:</b>	Authorized foods containing less than 0,30 mg of copper per 100g or food portion.
<b>Yellow column:</b>	Foods to eat with moderation because they contain between 0,30 and 1 mg of copper for 100g or food portion.
<b>Orange column:</b>	Foods to eat exceptionally and to avoid until the stabilization of the disease because they contain between 1 and 3 mg of copper for 100g or food portion.
<b>Red column:</b>	Foods to avoid because they contain more than 3 mg of copper for 100g or food portion

This document cannot be exhaustive but took into account the patients' most frequent requests.

The copper contents are determined from:

- the book: The composition of foods – McCance and Widdowson's.-2002
- the dosages carried out by the toxicology laboratory of the Lariboisière Hospital (foods marked with an asterisk)

\*Before any prescription, consult the full text of the summary of product characteristics (SPC)