

Wonders of Whole Grains



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Nutrition Society of Malaysia

IMPROVING LIVES through **NUTRITION**

As a professional organisation, we are guided by a simple belief – the more people understand food and nutrition, the better they can care for their health and well-being.

For that reason, we support the advancement of research, sharing practical insights and important discoveries for the benefits for all.

We also support the Government's efforts in promoting healthy nutrition in the society to combat nutrient deficiencies as well as diet-related chronic diseases in the country (e.g. obesity, diabetes, hypertension and coronary heart disease).

In caring for the community, we continuously disseminate practical nutrition information to the young and old alike, guiding them to discover the benefits of good nutrition and a healthy lifestyle.

We are committed to improve lives through nutrition. It's our way of serving Malaysians.

For more information, visit our website:
www.nutriweb.org.my

Our Activities

- Annual scientific conferences
- Scientific update sessions
- Malaysian Journal of Nutrition
- Berita NSM
- Consultation with health, regulatory & scientific bodies
- Roadshows & exhibitions with nutrition screening & dietary advice for the public
- Public talks & workshops
- A comprehensive and authoritative website on nutrition for Malaysians - <http://www.nutriweb.org.my>
- Nutrition promotion programmes in collaboration with other professional bodies and private sector (eg Nutrition Month Malaysia, Healthy Kids Programme, Positive Parenting)
- Conduct research on specific community groups

Our Major Publications

- Malaysian Journal of Nutrition
- Nutritionists' Choice Cookbook (Vol 1: Healthy Recipes for Your Little Ones)
- Resipi Sihat, Pilihan Bijak (Vol 1 & 2)
- Women@Heart *Wanita & Pemakanan* manual for professionals and leaflets for public
- Malaysian Dietary Guidelines leaflets
- NMM booklets on healthy eating and active living



Women@Heart *Wanita & Pemakanan* manual for professionals and leaflets for public



Nutritionists' Choice Cookbook,
Resipi Sihat, Pilihan Bijak
(Vol 1 & 2)



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Whole Grains are Wholesome

Whole grains became part of our diet over 10 000 years ago when man first discovered agriculture. A main source of energy, whole grains became a staple diet in many societies around the world.

Today, you can find grains in different forms – in pasta, rice, noodles, bread and so on. However, a majority of the population has changed to consuming polished or refined grains rather than wholegrain products, and most people are unaware of the various benefits that whole grains have to offer.

In its natural form, whole grains are more nutritious. It is rich in dietary fibre, vitamins and minerals which offer various health benefits. Wholegrain foods are associated with a lower risk of heart diseases, type 2 diabetes, and certain cancers, and also help with bowel health and weight management.

In view of the various benefits of whole grains, many health authorities from different countries, as well as the Malaysian Dietary Guidelines, have highlighted the importance of incorporating more whole grains into our daily diet.

This compact booklet will help you further understand the wonders of whole grains and the many ways to consume more of these wholesome foods in your daily diet.

Dr Tee E Siong

President

Nutrition Society of Malaysia



The **WHOLE** Story

Grains and their products are a food group that form the base of the Malaysian Food Pyramid. Being at the base, one's daily diet should comprise adequate amounts of grains (eg rice, oats, wheat, barley), with daily recommendations of 4-8 servings. Most of our daily energy need should be supplied by grains and their products.

However, many of the grains that we consume today have been processed (and refined). The various steps involved

in the process of refining grains remove the valuable outer layers – bran and germ of the grains. During this process, majority of the nutrients such as vitamins and dietary fibre in the bran and germ are stripped out.

The refining process of these grains can lead to the loss of more than half of the dietary fibre and folate (a B vitamin), as well as the loss of almost all of the mineral selenium and phytochemicals.

Definition of whole grains

“*Whole grains include the entire grain seed, usually called the kernel. The kernel consists of three components - the **bran, germ, and endosperm**. If the kernel has been cracked, crushed, or flaked, then, to be called a “whole grain”, a food must retain the same relative proportions of these components as they exist in the intact grain.*”

Whole Grain & Whole Meal: The Difference

- **Whole grain** contains the bran, germ and endosperm of the grain
- **Whole meal** contains the bran, germ and endosperm of the grain, but is finely milled, giving a finer texture

Common Types Of Whole Grains

Unpolished
(Brown) rice



Whole
wheat



Oats



Corn



Rye



Buckwheat



Dehulled
barley
(not pearled
barley)



Refined grains have been milled to remove the bran and germ from the grain, leaving only the endosperm. This is done to give grains a finer texture and improve their shelf life, but it also removes dietary fibre, iron, and many B vitamins. Most of the rice consumed is in the form of refined or polished rice.

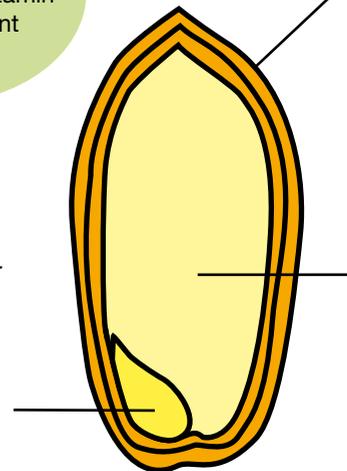
Phytochemicals are naturally occurring components found in plants. They are not nutrients but have been shown to possess antioxidant properties and are able to provide beneficial effects, including the possibility of reducing risk to some chronic diseases.

Whole Grains

A grain is the edible portion of the seed of a plant that is made up of three distinct parts: bran, endosperm and germ. A whole grain consists of all three parts of the grain. Whole grains are rich sources of vitamins B and E, minerals (eg magnesium, zinc and selenium), dietary fibre, and numerous phytochemicals.

Vitamin E found in the germ is a fat-soluble vitamin with antioxidant properties.

Germ, the embryo of the grain, makes up about 2% of the grain. It provides nourishment for the seed. Germ contains B vitamins, vitamin E, unsaturated fatty acids, and phytochemicals. It is removed during the milling process in the same way as the bran.



**Unpolished
(Brown) Rice**



Unpolished (Brown) Rice

- ✓ Brown rice has 5 times more dietary fibre and 8 times more vitamin E as compared to white rice!
- ✓ Brown rice is richer in B vitamins, minerals and phytochemicals (eg phenolic acids, phytic acids, plant sterols and saponins).

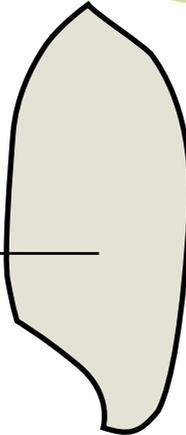
Are More Nutritious

Bran, the outer layer, which makes up approximately 15% of the grain, is always removed during the milling process to produce refined grain (eg white rice). It contains dietary fibre, B vitamins, iron, zinc and other minerals, a small amount of proteins, and phytochemicals.

Grains contain varying portions of the different types of dietary fibre, such as soluble fibre, insoluble fibre, resistant starches, and oligosaccharides.

Endosperm, which makes up around 83% of the grain, stores nutrients in the seed for germination. Endosperm contains mainly carbohydrates, some proteins, small amounts of vitamins and minerals, and phytochemicals.

Polished rice contains only the endosperm (mainly carbohydrate). The carbohydrate in the endosperm provides the energy needs of a person.



**Polished
(White) Rice**

S Polished (White) Rice

- ✓ 100g of brown rice provides at least 10% of daily requirement for folate (400µg). This is 2.5 times higher than white rice!
- ✓ Brown rice is lower in energy and fat content compared to white rice while their carbohydrate contents are almost the same!



The health benefits of whole grains have been recognised as early as in 4 B.C. Recent research on the potential health benefits of whole grains have discovered that these foods provide numerous health benefits and may reduce the risk of several chronic diseases such as cardiovascular disease, cancer and diabetes.



Wholesome



Bowel Health

Wholegrain food products are high in dietary fibre. Dietary fibre can help to regulate the movement of stools. Thus, bowel action becomes more frequent and helps to prevent constipation.

They have also been associated with a decreased risk of developing colon cancer and diverticular disease.

Some dietary fibres in whole grains (such as oligofructose and inulin) can function as prebiotics. They can help to promote the growth of beneficial bacteria in the gut while decreasing the levels of harmful bacteria, thereby promoting gut health.



Cardiovascular Diseases

Various studies have consistently shown that consumption of whole grains may contribute in reducing the risk of heart disease. This is probably due to the presence of various components in whole grains especially dietary fibre and some phytochemicals.

Goodness



Cancers

Recent research has shown that a high consumption of whole grains may help in reducing the risk of some cancers.

The high antioxidant activity and protective effects of phytochemicals, vitamin E, trace minerals and high dietary fibre content in whole grains play an important role in protecting against these cancers.



Type 2 Diabetes

Studies have shown that the risk to type 2 diabetes mellitus can be reduced by regular consumption of whole grains.

The beneficial effects may be due to dietary fibre which is known to be beneficial for weight management, an important aspect of diabetes control. In addition, dietary fibres are also known to improve blood glucose control in people with diabetes.

Whole grains can help to promote overall health and should be incorporated as part of a healthy lifestyle. This includes eating a balanced and varied diet, avoiding smoking and alcohol abuse, eating in moderation and getting regular physical activity daily.



Weight Management

Studies have indicated that consuming whole grains can reduce the risk of obesity and weight gain. The dietary fibre found in whole grains helps to promote a feeling of fullness, which reduces the amount of food eaten, and discourages overeating.

Do You Know...?

It's important to consume enough fluids every day (1.5-2.0 Litre) to prevent constipation as whole grains provide bulk by absorbing fluids.



More

You are now aware that consuming whole grains can bring you a lot of health benefits. Therefore, start by making whole grains a part of your daily diet as recommended by the Malaysian Dietary Guidelines.*

The Recommendations

“Eat adequate amount of rice, other cereal products (preferably whole grain) and tubers”

“Choose at least half of your grain products from whole grains”

Dietary Guidelines from other countries like the United States of America, New Zealand, Canada and Australia also highlight that whole grains should be part (or half) of your grain consumption.

Identifying wholegrain products

When purchasing wholegrain products, there are a few key words, terms and indicators that you can look for to help you achieve a wholesome whole grain diet. Here are some ways to help you to identify the wholegrain products.

1. Product name

First, look for words like “whole grain”, “wholemeal” or “whole” that comes before the grain’s name. Descriptive words such as “softmeal”, “7 grain”, “multi-grain” or “enriched” do not necessarily mean that the product is whole grain.

Look for “wholemeal or wholegrain bread” made with wholemeal flour or wholegrain products.

You may be able to find some products having logos indicating that they are wholegrain foods.



2. Ingredient list

Check the ingredient list and make sure that whole grain is listed as an ingredient (eg wholewheat flour or whole oats).

The whole grain ingredient(s) should ideally be listed as the first or second item in the list. It would be better if the percentage of whole grain contained in the product is indicated.

INGREDIENTS/RAMUAN

Cereal Grains (79.8%) [(Maize Semolina (24.4%), Rice Flour (21.4%), Whole Grain Wheat (20.9%), Whole Grain Oat Flour (8.8%), Whole Grain Barley (4.3%)], Sugar, Wheat Starch, Glucose Syrup, Raising Agent: Tricalcium Phosphate; Brown Sugar, Palm Oil, Iodized Salt, Wheat Germ.

Whole Grains!

3. Dietary Fibre Content

High dietary fibre food products do not necessarily mean that they are wholegrain foods. For example, foods that contain wheat bran may be high in dietary fibre but they are not wholegrain products.

4. Colour and Texture

Never judge a food product by its colour. Bread that is brown in colour does not necessarily mean that it is made from whole grains. Sometimes, bread or biscuits are brown because molasses or caramel colouring have been added into them. Many wholegrain cereals and wholegrain food products are lighter in colour.

As for texture, not all wholegrain foods are dry and gritty. Some whole grains are light and flaky, like cereal grains, while some may have a “nutty” flavour.



Look out for wholegrain products

There are many different types of wholegrain products available in the market. Here are some examples of wholegrain products and non-wholegrain products:

Wholegrains products	Non wholegrains products
wholegrain breads	brown bread
wholegrain cereals	wheat bran/germ
brown rice	chickpeas
wholewheat pasta	multi-grain bread
corn (maize), popcorn	100% wheat
whole oats	sunflower seed
wholewheat or wholegrain crackers	foods made with enriched flour, high fibre content foods
millet, sorghum	soya bean product
	pearled barley

Do You Know...?

Wholegrain products are not necessarily made up of 100% whole grains. The amount of percent of whole grains in the product may be stated on the food label. Opt for those products that contain a higher percentage of whole grains.

** The Malaysian Dietary Guidelines provide recommendations that cover 14 aspects of healthy eating and active living. Details can be obtained from the Nutrition Society of Malaysia's website www.nutriweb.org.my*

Whole

Knowing the nutritional value and various health benefits of whole grains, you would now want to incorporate whole grains into your everyday dishes. This is not difficult to do. Here are some tips that can help you to achieve this.

- Substitute or incorporate brown rice, wholegrain pasta, wholegrain noodles in daily cooking.
- Use wholemeal flour when cooking or baking your favourite breads, muffins, or cookies.
 - Add whole grain, such as oats or wholemeal flour to thicken soups and gravies instead of corn flour.
 - Substitute the filling of muffins, cookies, cakes with whole grains and decorate using whole grain (eg oatmeal cheese cake)
 - Bread chicken or fish with wholegrain cereals, wholemeal bread crumbs or oats.



Grains at Every Meal

Sometimes, it can be daunting to be eating everything that is whole grain based. But if you divide your food types equally in each meal, it may be easier to achieve the guideline of eating half of your grains as whole grains. Break it up and mix it up! You could also follow these handy tips below!

Breakfast

- Choose wholegrain breakfast cereals – mix various cereals to make your own muesli (eg rolled oats + whole wheat + raisins).
- Consume wholegrain breads instead of white bread with eggs.
- Take oatmeal porridge with fruits.



Lunch/dinner

- Mix brown rice with white rice and gradually substitute white rice with brown rice
- Choose wholegrain pasta, mee-hoon or noodles.



Morning/afternoon Snack

- Make different types of fillings for your sandwiches and serve with wholegrain breads/ tortilla/ pitta bread/ chapatti.
- Make your own popcorn, or corn in a cup
- Snack on wholegrain cereals or crackers with milk.
- Make fruit smoothies with added wholegrain cereals.
- Top yoghurts or ice-creams with muesli or any wholegrain cereal.
- Make your own wholegrain pancakes and waffles.



Get Creative with Whole Grains!

Whole grains can be incorporated into part of your daily family meals. If you are worried that your family members may kick up a fuss over this change in the food menu, then be creative in mixing whole grains into your normal cooking and be adventurous to try it out on your own first. Your family may not even realise that they are eating wholegrain foods! Here are some tips for you:

Brown Rice is Nice



Introduce brown rice to your family. Try out brown rice by mixing half of it with your white rice or adding various ingredients to it to make it tastier. You could even use brown rice to make a nice all-in-one dish!

Tasty Oats

Oats are so versatile. Besides eating the usual way, you could also add oats into your main dishes, thicken your soup or gravy or add into cakes, muffins and cookies. For a more tastier oatmeal, you

could also add fruits like apples or dried apricots. This way, you not only get to experience the different flavours of these foods but also gain a more nutritious meal or snack.

Yummy Bread

Are you in a hurry to go somewhere? If you are, then take 5 minutes to make a sandwich using wholegrain bread with healthy fillings such as sardine, tuna or egg. Wholegrain breads can add flavour and texture.



Mix & Whip

Kids love biscuits and yummy drinks. Why not try hiding some wholegrain cereals in them? You could blend the cereals together with your kid's favourite fruit and turn it into an attractive smoothie or biscuit.

Try the recipes in the next few pages to get started on eating more wholegrain meals daily.

Cooking tips

- As whole grains absorb more water than refined grains, add more water during cooking.
- To shorten cooking time, soak whole grains in water before cooking.

Lemongrass Claypot Brown Rice

(Serves 3)

Ingredients

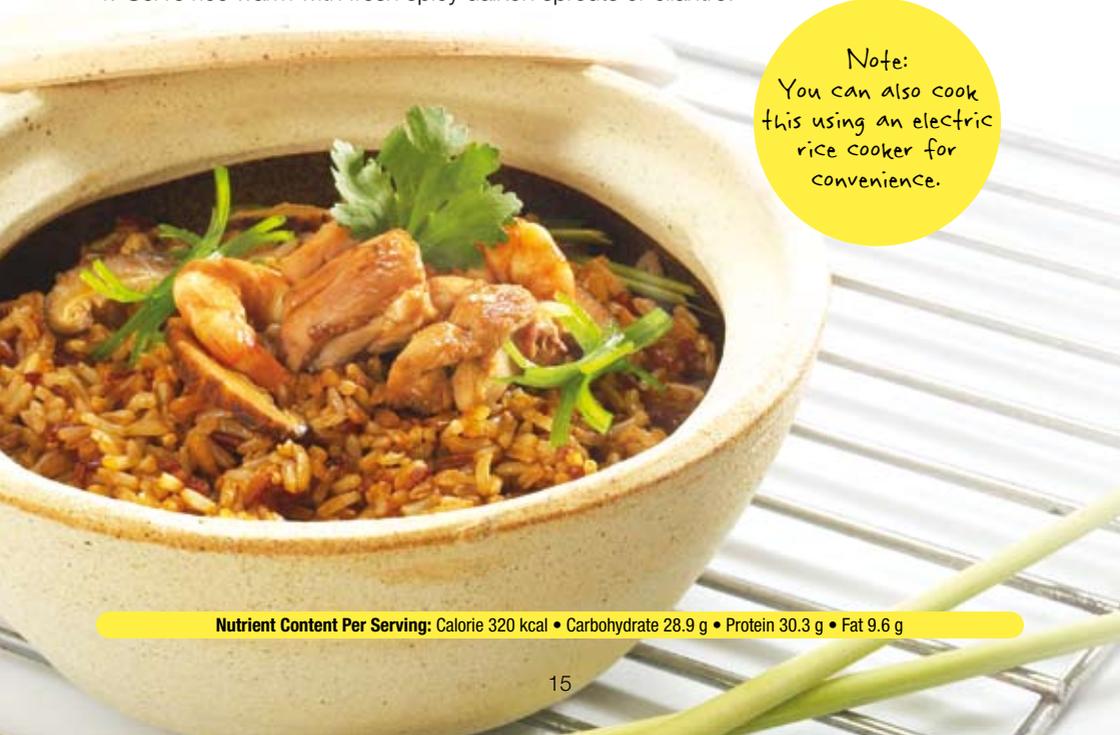
- 1 ½ cups brown rice
- 4-5 dried chinese mushrooms, soaked & sliced
- 1 ½ scallions, sliced thinly, crosswise
- ½ tbsp ginger, grated
- 1 tsp garlic, grated (about 2 cloves)
- 2 fresh lemongrass, cut into 2" long, skinny strips (use only the soft inner layers)
- 300g chicken, in bite-size pieces
- 2 tbsp oyster sauce
- 1 tbsp soya sauce
- ½ tsp sesame oil
- 150g prawn, shelled and de-veined
- 250 ml (1 cup) chicken broth
- 310 ml (1 ¼ cups) water
- 1 tbsp soy sauce, extra

Marinate together for at least 20 minutes

Method

1. Rinse rice with water a few times. Pour rinsed rice into a clay pot.
2. Add mushrooms, scallions, ginger, garlic, lemongrass, marinated chicken and prawn.
3. Pour chicken broth, water and soy sauce in; gently mix everything and start to cook until all liquid is absorbed.
4. Serve rice warm with fresh spicy daikon sprouts or cilantro.

Note:
You can also cook this using an electric rice cooker for convenience.



Nutrient Content Per Serving: Calorie 320 kcal • Carbohydrate 28.9 g • Protein 30.3 g • Fat 9.6 g

Oatmeal Muffins

(Yield 12 muffins)

Ingredients

125g (1 cup) oatmeal
90g (¾ cup) plain flour
110g (¾ cup) wholemeal flour
1½ tsp baking powder
½ tsp baking soda
1g (¼ tsp) salt
130g (¾ cup) raisins
65g (⅓ cup) unsalted butter
85g (½ cup) brown sugar
2 large eggs, lightly beaten
300ml plain yogurt or reduced fat milk
10ml (1 tbsp) cooking oil for greasing muffin pan

Method

1. Grease a 12-cup muffin pan with oil, or line with muffin paper liners.
2. Preheat oven 180°C.
3. Combine plain flour, oatmeal, wholemeal flour, baking powder, baking soda and salt together in a bowl. Mix well.
4. Add in raisins and set aside.
5. Cream brown sugar and butter until light and fluffy. Then add eggs one at a time. Continue to beat until the butter batter looks smooth. Pour in yogurt or reduced fat milk and stir together.
6. Add in half of the flour mixture and stir. Pour in the other half and gently stir together until just combined.
7. Do not over-mix the batter; it is okay if the batter looks a little lumpy. Over mixing will cause the muffins to become chewy.
8. Pour into the greased muffin pan and bake for 20 minutes or until a toothpick inserted into the centre comes out clean.
9. Let stand for 3 minutes and transfer to cooling rack to cool.



Note: You may add topping to the muffins like nuts and bread crumbs, to add more flavour.

Nutrient Content Per Serving (1 muffin): Calorie 221 kcal • Carbohydrate 35.0 g • Protein 5.8 g • Fat 6.6 g

Banana Wholemeal Bread

(1 loaf)



Bread base ingredients

- 100g (¾ cup) plain flour
- 80g (¾ cup) wholemeal flour
- 43g (½ cup) ground almond
- 7.6g (2 tsp) baking powder
- 2g (½ tsp) bicarbonate of soda
- 2.6g (½ tsp) salt
- 1.3g (½ tsp) cinnamon
- 130g (⅔ cup) caster sugar

Banana Mix

- 2 large eggs, lightly beaten
- ¼ tsp vanilla, either pure or essence
- 100g butter, melted and cooled
- 2 tbsp yogurt or reduced-fat milk
- 1 cup (4) ripe bananas, peeled and mashed

For variation: decorate with oatmeal, sunflower/pumpkin seeds or walnuts

Method

1. Preheat oven to 160°C. Lightly grease a 19 x 9 cm loaf tin with butter or line with baking paper.
2. Place bread base ingredients into the bowl of electric mixer. Mix on low speed for about 1 minute.
3. Add eggs, vanilla and melted butter. Beat on medium speed for 3 minutes. Remove bowl from mixer and fold in milk and banana by hand. Do not over mix the mixture, it is okay if the batter looks lumpy.
4. Pour the mixture into the prepared tin and bake for 50 minutes, or until a toothpick inserted into the centre comes out clean. Cool in tin for 5 minutes.
5. Transfer to a cooling rack and when it is fully cold, slice into 12 pieces.

Note:

1. You may use other nuts or seeds like walnuts or sunflower/pumpkin seeds instead of ground almond or a mixture of them.
2. Instead of baking in loaf tin, you may use cupcake liners and bake for 30 minutes or if toothpick comes out clean.

Nutrient Content Per Serving (1 piece): Calorie 228 kcal • Carbohydrate 30.3 g • Protein 4.5 g • Fat 9.9 g

Apricot Whole Wheat Cereal Biscuits

(Approx. 60 biscuits)

Ingredients

- 175g (1 ½ cups) plain flour
 - 60g (½ cup) corn flour
 - 1 tsp baking powder
 - 60g (2 cups) wholegrain corn flakes, finely blend
 - 60g (2 cups) wholewheat cereal, finely blend
 - 150g (1 cup) finely chopped dried apricots
 - 150g (¾ cup) butter or margarine
 - 100g (½ cup) caster sugar
 - 1 tsp vanilla essence
 - 1 large egg
- For variation: decorate with nuts (eg cashew or almond) or cherries

Note: You can also try a mix of banana and strawberries if you like a more berry-licious drink

Method

1. Sift plain flour, corn flour and baking powder together and stir in wholegrain corn flakes, wholewheat cereal and chopped apricots. Mix well and set aside.
2. Cream butter, sugar and vanilla essence until fluffy. Add egg and beat well.
3. Fold in the batter with flour mixture and mix well until soft dough forms.
4. Roll dough into 1 cm thick and cut with desired cookie cutter. Place dough on lightly greased baking trays, allow room for spreading.
5. Bake in preheated oven at 180°C for 15-20 minutes or until golden brown. Remove from oven and let it cool for 20 minutes.



Nutrient Content Per Serving (3 biscuits): Calorie 162 kcal • Carbohydrate 23.9 g • Protein 2.4 g • Fat 6.6 g

Banana-Mango Breakfast Smoothie

(Serves 1)

Ingredients

- 125 ml (½ cup) milk
- ½ medium mango, diced or sliced
- 1 medium banana, diced or sliced
- 2 tbsp oat muesli (or any breakfast muesli of your choice)
- Sugar or honey to taste

Method

1. Pour milk into a blender and add mango, banana and muesli. Blend until mixture is smooth.
2. Add sugar or honey to taste. Serve chill or with crushed ice

Nutrient Content Per Serving: Calorie 300 kcal • Carbohydrate 55.1 g • Protein 8.4 g • Fat 5.3 g

How can my child benefit from eating **WHOLE GRAIN** food?

✓ Kids Gain From Whole Grains

While some foods need to be fortified with nutrients in order to bring us benefits, whole grains are different. In fact, when left intact in their natural state, whole grains have more health benefits to offer.

✓ Back to Basics

A growing number of studies clearly demonstrate the health benefits of whole grains. That's right, we are keeping all the three parts of the grain intact and eating all of them for better nutrition!

✓ What is a whole grain?

A grain is the seed of a plant such as wheat, corn or oat. A whole grain is comprised of three parts: the Bran, the Endosperm and the Germ (as seen in the figure below).



1. Fuel for growth and activities

Kids and adolescents need more energy per kilogram of body weight compared to adults. Whole grains are good sources of energy. Whole grains are digested slowly and release energy in a steady manner.

2. Fibre for healthy digestive functions

Whole grains promote regular bowel movement which keeps the digestive tract healthy.

3. Good lifelong dietary habits

Childhood eating habits lay the foundation for later health. Parents should encourage their children to eat healthful foods from young and whole grains are one such food.

4. Immediate & future health gains

We have to ensure that these children obtain sufficient energy and nutrients from their diet to grow and develop optimally. Clearly, children have much to gain from whole grains.



Nestlé® Breakfast Cereals
Made with Nutritious
WHOLE GRAIN

ENRICHED WITH **10** VITAMINS AND MINERALS

Nestlé Nutrition Group (2022) Ltd





NESTLÉ® MULTI GRAIN CHEERIOS® with Whole Grain goodness. Made from rice, oats, corn, barley and wheat, it provides vitamins, minerals, fibre and protein.



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Amazing Nutrition