



# INCREASING WHOLE GRAIN INTAKE : A TECHNICAL PERSPECTIVE

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# Outline

1. Introduction

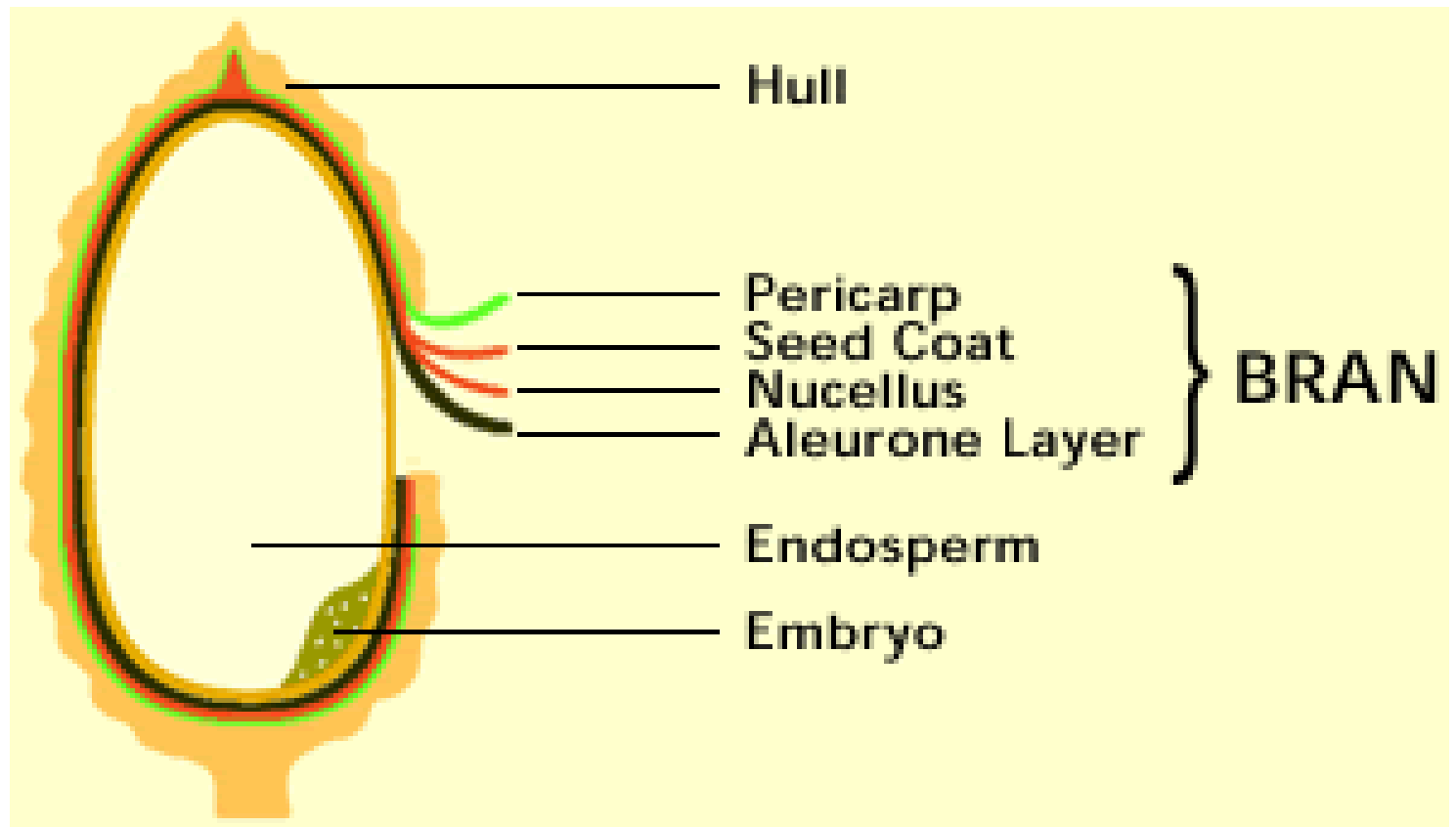
2. Whole Grain Standards in Indonesia

3. How to Move from Refined Grain to Whole Grain in the Local Indonesian Products

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# Introduction

- Whole grain is generally defined as the intact, ground, cracked or flaked kernel after the removal of inedible parts such as the hull and husk, the components -- endosperm, germ and bran-- are to be present in the same relative proportions as they exist in the intact kernel.
- Whole grain is commonly a cereal such as rice, wheat, corn, sorghum, rye, barley, oat, millet.



# Introduction

- Many studies showed that consumption of whole grains related to health benefits such as lowering risk of non communicable diseases.
- It was revealed that the health benefits were proportional to the amount of whole grain consumed.
- Many countries have recommendations to increase the consumption of whole grains.

# Whole Grain Standards in Indonesia

- There is no “standard” of whole grain in Indonesia
- Nevertheless, there are some products related to whole grains which are covered in Food Category in Indonesia (Perka BPOM No, 21 Tahun 2016 tentang Kategori Pangan)
- Food Category (adopted from Codex GSFA) is used in the registration of food products.
- Food Category contains description or definition and basic characteristics of food products (These are mandatory to be met).

# Whole grain products in Food Category (PerKa BPOM)

- **Whole durum wheat semolina or whole durum wheat flour** : semolina or flour obtained from grinding of durum wheat grains (*Triticum durum* Desf), containing bran and germ.  
**Basic characteristics** : Moisture content not more than 14,5%. For whole durum wheat semolina : ash content not more than 2,1% and protein content not less than 11,5%.

# Whole grain products in Food Category (PerKa BPOM)

- **Wholemeal Wheat Flour** : flour obtained from grinding of whole wheat grains. **Basic characteristics** : fiber content not less than 2% (db), moisture content not more than 14,5%, particle size 95% passed of 70 mesh sieve, protein content not less than 7%.



# Whole grain products in Food Category (PerKa BPOM)

- **Ready To Eat Whole Grain Cereal** : ready to eat cereal product made of main ingredient of whole cereal grains. **Basic characteristics** : whole cereal grain content not less than 25%, dietary fiber not less than 3 g/100g
- **Whole wheat pasta**: pasta made of whole wheat flour or whole durum wheat flour, other ingredients may be added. **Basic characteristics** : Moisture content not more than 12,5%, protein content not less than 10%.

# Whole grain products in Food Category (PerKa BPOM)

- **Whole wheat bread** : bread made from a dough of whole wheat flour, fat, sugar, water which is fermented by baker yeast. **Basic characteristics** : sugar content not more than 5%, whole wheat flour not less than 10% of total flour.

# How to Move from Refined Grain to Whole Grain in the Local Indonesian Products

- Traditionally, in the past Indonesians consumed brown rice (which is whole rice grain) as their staple food.
- Unfortunately, at present most Indonesians have shifted to polished rice grain.
- Some Indonesians consumed red rice or black rice, which are whole rice grains, for the reason of low glycemic index and or health benefits.

# How to Move from Refined Grain to Whole Grain in the Local Indonesian Products

- Whole grains produced and consumed in Indonesia : rice, corn, sorghum, millet.
- Local foods : boiled, steamed, baked, fried products.
- The local foods are mainly produced by households or small scale enterprises.

# How to Move from Refined Grain to Whole Grain in the Local Indonesian Products

The following are strategies found to be effective in increasing whole-grain consumption (Ferruzzi et al 2014) :

- Direct substitution (i.e., brown rice for white rice)
- Replacement of refined-grain foods with whole-grain foods, where the 2 foods differ ·
- Adding new whole-grain foods in the diet ·

# How to Move from Refined Grain to Whole Grain in the Local Indonesian Products

The following are strategies found to be effective in increasing whole-grain consumption (in Ferruzzi et al 2014) :

- Structural changes in meal patterns (i.e., eating breakfast that contains whole grains when breakfast was not previously consumed) ·
- Stealth approach (i.e., whole-grain ingredients are gradually substituted for refined grains)

# How to Move from Refined Grain to Whole Grain in the Local Indonesian Products

Those strategies require :

- Supports of technical aspect to provide availability of whole grains and whole grain products
- Community education

# How to Move from Refined Grain to Whole Grain in the Local Indonesian Products

Supports of technical aspect to provide availability of whole grains and whole grain products :

- Technology of whole grain production (e.g. how to remove hull or husk without removing bran and germ from the kernel)
- Technology of whole grain packaging (e.g. how to inhibit lipid oxidation during storage and retail of whole grain)
- Technology of processing (e.g. formulation and how to produce whole grain foods which are practical, affordable, healthful, desirable for consumer/having acceptable sensory characteristics)



# How to Move from Refined Grain to Whole Grain in the Local Indonesian Products

## Community education :

- Developing new dietary guidance to encourage the consumption of whole grain
- Multi component educational strategies in social media, community groups, schools, university, association of hotel, restaurant and catering, etc.
- Short appropriate trainings for community and local food producers on how to make local foods from whole grains.
- A clear labeling for whole-grain foods would help consumers to accurately identify foods that provide a meaningful amount of whole grains.

# How to Move from Refined Grain to Whole Grain in the Local Indonesian Products

- Rice consumption of Indonesian = 85.5 kg/person/year = 234 g/person/day.
- Recommended whole grain intake : minimum of 48 g/person/day (Dietary Guidelines for Americans, 2010).
- Minimum of 20% substitution of brown rice for white rice is sufficient for Indonesian.
- Technically, brown rice can be easily produced, stored, packaged, and processed using existing available infrastructures.

# Conclusion

- In order to increase the whole grain intake, acceptable and meaningful standards of whole grain and whole grain foods (or at least definition) should be established.
- Appropriate technical aspects have to be developed to make available, affordable, and desirable whole grain foods on the market.
- Community education efforts and awareness building to consumers need to be consistently conducted on the health benefits of whole grain intake.



**Thank You**