

## Alternatives to Wheat Flour

### What Happens to Wheat Flour when it is Refined?

- 93% of the fiber is removed
- 50% of the essential fatty acids are lost
- 22 minerals and vitamins are reduced by 20%
- most of the vitamin E is removed
- bleaching strips many of the remaining nutrients

### Helpful Hints...

- the best flour comes from stone-ground mills that do not overheat the flours, and retain the nutrients
- flours should be bought from a store that has a high turnover
- to store, remove flour from its original package and refrigerate in a glass, airtight container
- purchase small amounts at a time and use it quickly, since flour does have limited shelf life of 1-2 months

**Non-wheat grains** (*Italics = related to wheat*): amaranth, buckwheat, quinoa, bean flours (soy, chickpeas), *corn, rye, oats, barley, millet, rice, teff, kamut, spelt*

Flour	Comments	Nutritional Qualities	Flour equivalent to 1 cup white/ whole wheat flour
*Amaranth flour	-strong, distinctive flavour -best combined w/ other flours that contain gluten or have more cohesion (arrowroot, tapioca, bean) -add to baked goods, pancakes/ waffle recipes	-gluten-free	1 cup
*Arrowroot Starch	-superior replacement for corn starch; add 1tbsp to an equal part of cold water before adding to dishes as a <b>thickener</b> -combines well w/ non-gluten flours to give them cohesion	-gluten-free	½ cup
Barley flour	-makes a sticky bread -has a sweet, malty flavour	-low in gluten	1 cup
*Bean flour		-gluten-free	¾ cup
*Brown rice flour	-yields a sweeter, smoother bread -use w/ other flours, at a ratio of 20% of brown rice flour in recipe	-gluten-free	
Buckwheat flour	-makes a dark, heavy bread -use w/ rice flour	-the kernels contain an outer hull which is high in the essential amino acid, lysine; the ground into the flour, the darker and more nutritious	7/8 cup buckwheat (1 cup minus 2 tbsp)
Chestnut flour	-used to sweeten baked goods -adds lightness and creaminess -use alone or mix w/ other flours		

*Chickpea flour	-used in East Indian culture to make flatbread called papadam, Italy for pauelle (chickpea wafers), and in southern France for socca (chickpea wafers) -too dense and rich to use on its own	-gluten free	7/8 cup (1 cup minus 2 tbsp)
*Cornmeal	-makes a light bread -mix w/ equal parts of cold water before adding as a <b>thickener</b> -best combined w/ small amounts of other flours	-stone ground is more nutritious	1 cup
*Cornstarch	- <b>thickener</b>	-gluten-free	¾ cup 1 cup corn flour
*Garbanzo flour	-good in sauces, pancakes -use alone or mix w/ other flours	-gluten-free	
Kamut flour	-light texture -rich, buttery flavour -use in baking	-excellent substitute for wheat sensitive people	1 cup
Kudzu Starch	-noxious weed in southern US - <b>excellent substitute for arrowroot or tapioca starch</b> ; it will thicken a sauce as it cools, whereas arrowroot becomes thinner		
*Millet flour	-always combine w/ other flours	-gluten-free	1 cup
Nuts/Seeds	-use ground		½ cup
Oat Bran		-binds cholesterol	
Oat Flour	-light texture -adds moisture to baked goods -best combined w/ corn or rice flours, use only 20% oat flour in recipe -contains a natural antioxidant, therefore retains its freshness longer than wheat		1 1/8 cup flour 1 1/3 cup rolled oats
*Potato Flour/Starch	-best combined w/ other flours - <b>thickener</b>	-gluten-free	5/8 cup flour ¾ cup starch
*Quinoa flour	-best combined w/ other flours	-gluten-free	
*Rice flour		-gluten-free	7/8 cup (1 cup minus 2 tbsp)
Rye flour	-makes a sticky, dense bread -knead dough well	-low in gluten	1 ¼ cup
*Soy flour	-makes bread or baked goods more moist and smooth - best if add small amounts to other flours; use only 20% soy flour in recipe, decrease temperature by 25 degrees	-gluten-free	¾ cup
Spelt flour		-excellent substitute for wheat sensitive people	1 cup
*Tapioca Starch	-made from cassava root - <b>excellent substitute for arrowroot or corn starch</b> -thins if reheated -combines well w/ non-gluten flours to give them cohesion, <b>thickener</b>	-gluten-free	1 cup
*Teff flour	-used by Ethiopians to make a large	-gluten-free	

	flatbread -do not add to yeast breads because it has its own symbiotic yeast		
<b>Wheat Bran</b>	-the whole wheat berry has 6 fibrous layers known as bran -indigestible, therefore adds bulk and fiber -add small amounts to baked goods		
<b>Wheat Flour</b>	-variety of forms: durum, semolina, unbleached, bleached, whole wheat, pastry -stone ground is best -store in refrigerator because it has a short shelf life	-high in gluten	

\*=gluten-free

**Flour Combinations:** equivalent to 1 cup of white or whole wheat flour

- ½ cup rye flour + 1/3 cup potato flour
- 1/3 cup rye flour + 5/8 cup rice flour
- 1/3 cup rye flour + 1/3 cup oat flour + 1/3 cup barley flour
- ½ cup potato flour + 1/2 cup rye/spelt flour
- 1/3 cup potato flour + 2/3 cup rye/spelt flour
- 1 cup soy flour + 1/4 cup potato starch
- ½ cup soy flour + ½ cup potato starch
- 5/8 cup rice flour + 1/3 cup potato/rye/spelt flour
- ½ cup corn starch + ½ cup rye/rice/potato flour
- ½ cup arrowroot + ½ cup rye flour
- ½ cup arrowroot + ½ cup potato flour

**Tips for substituting for wheat flour:**

- do not be concerned if batter appears thinner than wheat batters, this is common
- add 1/2 tsp baking powder per cup of substitute flour; add just before cooking because it loses its potency when mixed w/ liquid and allowed to sit
- refrigerating dough 1/2 hour helps improve texture
- don't bake anything thicker than 4 inches
- when baking, lower the temperature a little
- baking time is usually longer, especially if egg or milk is eliminated from the recipe

**For thickening, the following quantities equal 1tbsp of wheat flour:**

- \*Arrowroot 1 tbsp = 2 tbsp wheat flour
- Barley flour 1 tbsp
- \*Corn starch 1 tbsp
- Oatmeal flour 1 tbsp
- \*Potato flour/starch ½ tbsp
- \*Rice flour ½ tbsp
- \*Tapioca flour ½ tbsp

**Sour cream alternative:**

4-6 oz soft tofu, drained

2 tsp vinegar

¼ tsp sea salt

1 tsp arrowroot/kudzu

? plain soy milk

Blend well in a food processor, pour mixture into a saucepan and thicken over medium heat

**Egg alternatives:** equivalent to 1 egg

1. 2 tbsp water + 1 tbsp oil + 2 tbsp baking powder

2. 1 tbsp ground flax seed simmered in 3 tbsp water

3. 2 tbsp water + 2 tsp baking powder

4. ¼ cup of tofu

5. 1 egg white = dissolve 1 tbsp plain unflavoured gelatin in 1 tbsp water; whip, chill and whip again

**Vinegar alternatives:**

1. Lemon juice, lime juice, or unsweetened cranberry juice

2. Dilute 1 tsp vitamin C in ¼ cup of water

**Resources**

McLaren, Tannis. *Simply Healthy Cookbook*. UofT Press Inc. Toronto. 2002.

Pitchford, Paul. *Healing with Whole Foods, 3<sup>rd</sup> ed.* North Atlantic Books, Berkely, CA. 2002.

Handout on *Alternatives to Wheat Flour* from Choices Market, Vancouver, BC.