Orange fiber replaces fat in bread making

Final paper has shown it is possible to use industrial waste to produce soft, fiber rich and fat-free bread

With the increasing number of overweight Brazilian people – over half the population is in this category (52,5%), according to the Ministry of Health – the search for a healthier reduced-in-fat diet has been a challenge. According to UFRGS' Food Engineering teacher Roberta Silveira Thys, there is a worldwide trend to reduce the levels of fat and chemical additives in food preparation in order to make them more functional. On the other hand, the Brazilian food industry registers an enormous food waste disposal, often with a big potential of nutrients: "The orange juice industry in Brazil supplies a wide range of countries, so can you imagine the amount of orange skin that is left after this manufacturing process?" asks Roberta.

Roberta Thys e Liana Stoll produced bread reutilizing wastes donated by a juice company - Photo by: Gabrielle Paula/UFRGS

With this question in mind, the food engineer Liana Stoll has developed, as her final paper, the research "Use of orange fiber in replacement for fat in bread making", under the supervision of Professor Roberta Thys and co-supervised by Professor Simone Flôres: "We know there are many industrial processes generateing by-

products that sometimes are used as fertilizers, even when they do not have the right properties for this end," says Liana.

Employing the waste donated by a juice company and a process of orange peel powder making developed in a master's research of the UFRGS' Instituto de Ciência e Tecnologia de Alimentos (ICTA), Liana has applied this processed fiber to bread dough to verify if fatless dough would keep characteristics similar to those found in regular bread. "We noticed that the greater the amount of dough the bitter it would taste, so we ended working with a controlled amount to avoid the residual flavor," she explains. To avoid size decrease, the orange fiber addition was combined to the use of a-amylase – a natural enzyme for the wheat flour that breaks the carbohydrates, turning them into the sugar that creates the yeast that gives the right volume. "We had already acknowledged that this powder had a potential to replace fat, retain water, which allows the softness, since fatless bread tends to be hard," Roberta remarks.

The taste testers' panel was composed by 50 people aged between 18 and 60. The general acceptance of the sample got a 7,4 grade, which means "I liked it (moderately)" to "I liked it very much". Considering that a product must have a rate of sensorial approval higher than 70% to be approved in the market, the research concluded that it is viable for consumption. "By adding this fiber, we've got a fat free loaf of bread which is fiber rich and has kept its softness and nutritional quality," states Roberta.

However, the teacher emphasizes that few companies are interested in the results of this kind of research. "I think food manufacturers have not realized yet that, besides giving a better destination to these wastes, they can make good money out of it," explains Liana, who goes on motivated to reduce the environmental impacts and add value to food items. In the course of her master's program attendance, concluded in 2015, she had worked with wine yards by-products. "We have to think about these alternatives, and it is in this direction that we seem to be following," she concludes.

Scientific paper:

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Final paper

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