



Enhancing Freshness of White Pan Bread with Nouravant® Maple Fiber

Consumers of white pan bread (sandwich bread) expect the bread to be soft when purchasing. However, many of the additives that help maintain freshness through the product's shelf-life are unappealing to consumers.

Nouravant® maple fiber is a unique hydrogel that can help manage water in bakery applications. In addition to helping maintain softness and consumer appeal, Nouravant is clean ingredient for labeling that supplements a formulation with fiber.

Nouravant was tested in a pan bread formulation to evaluate its impact on softness over one week. In this basic pan bread formulation experiment, Nouravant maple fiber extended the softness of the sliced bread compared to the bread not using it. Using Nouravant at 1.8% flour weight contributes 0.85g/serving of fiber to the formulation (50g RACC).

Test methods

Producing breads

Loaves were made using a simple pan bread recipe (see Table 1) with and without Nouravant. Since Nouravant is a hydrogel, the amount of water added to each experiment was the same, accounting for the moisture coming from the ingredient. On a total weight percentage-basis, the control formula adds 35.2% water and the formula using Nouravant adds 35.1% water.

Table 1: Pan Bread Formulation

Ingredient	Control Flour %	Maple Fiber Flour %
Bread flour (12% protein)	100.0	100.0
Granulated sugar	6.0	6.0
Palm shortening	4.0	4.0
Salt	2.0	2.0
Instant yeast	1.5	1.5
Nouravant® maple fiber	0.0	1.8
Calcium propionate	0.5	0.5
Water	62.0	60.3
TOTAL	176.0	176.0

Procedure:

1. Combine dry ingredients in mixing bowl and blend on low speed for one minute.

2. Add yeast, water, and maple fiber.
3. Mix for 4 minutes on low speed, then increase to next speed for 6 more minutes.
4. Rest dough (covered) for 15 minutes.
5. Portion and shape 1kg pieces and rest (covered) 10 minutes in Pullman style pan.
6. Proof at 90°F for 60 minutes.
7. Bake for 20 to 25 minutes at 400°F.
8. Cool completely before cutting into 1/2" slices.

Note: Calcium propionate was used in the formulations to minimize the variable of spoilage, so that eating quality could be the focus of the study.

Characterization

The rise of the breads was measured by taking the height of the center slices. Water activity was measured using Rotronic HC2-AW probe and HW4 software.

Texture analysis

A method based on the AACC (74-09.01) project from Stable Microsystems Exponent Connect software was used to evaluate softness of the breads over one week. A one-inch acrylic cylindrical probe was used to compress 2 slices of bread to 40% strain. The average firmness is reported at 25% strain. Bread was measured the day after baking (day 1), two days after, five days after, and seven days after. Loaves were stored in a slightly cooler than ambient room in plastic wrap. The first slices of each end were not used for texture analysis. The remaining slices were measured from front end (day 1) to back end (day 7).

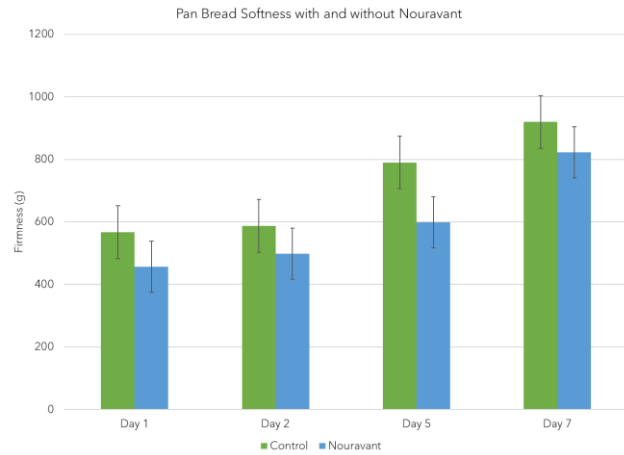
Results

The breads made with and without Nouravant had generally the same overall appearance. The breads with Nouravant had slightly more height than the control breads (11.5cm and 10.8cm, respectively; see photo 1). Since the amount of water added to both formulations was the same, there was also no difference seen in water activity (0.92-0.93 at 21°C).

Photo 1: control breads made without Nouravant (L) had slightly less height than the breads made with Nouravant (R).



Chart 1:



The bread made with Nouravant maple fiber (blue bars) was softer, indicated by lower grams of firmness, than the control (green bars) from day 1 through day 7. The amount that each bread changed from day 1 to day 7 was 62.0% in the maple fiber breads compared to 80.0% in the control breads.