



Product Profile

Pulse Flour Milling and Utilization Project | Cigi (Canadian International Grains Institute) | cigi.ca



Tortilla Formulated with Roasted Red Lentil Flour

Roasted Red Lentil Flour in Tortillas

Adding red lentil flour to traditional wheat flour tortilla formulations can help improve nutritional properties by increasing dietary fibre and protein content while contributing valuable vitamins and minerals such as folate and iron. The effect of a pretreatment process, such as roasting, has been shown to positively affect the end product quality of tortillas that have included roasted red lentil flour in their product formulation.

Tortilla Formulation and Processing

Tortillas were made following a standard commercial method for tortilla production using the formulation provided in Table 1. Two red lentil flours, one roasted and one untreated, were used to evaluate differences between the two flours.

Dough was mixed using a Hobart mixer on speed 1. After 1 minute of mixing, canola oil was added and the dough was mixed for an additional minute. The speed was then increased to 2 and mixed for 4 minutes. The dough was scaled to 1440 g and allowed to rest for 10 minutes. A bun divider was used to form 40 g dough balls which were immediately pressed into 7 inch diameter discs using a heated tortilla press. The tortillas were cooked for 35-40 seconds on each side or until puffing and browning occurred. Tortillas were allowed to cool prior to packaging.

Table 1. Formulation for Tortillas Containing 25% Red Lentil Flour

Ingredient	Red Lentil/Wheat Flour Tortillas Bakers %
Wheat flour	75
Roasted red lentil flour	25
Water ¹	57
Salt	1.5
Baking powder	1.5
7-B Inactive dry yeast	1
Sugar	0.5
Fumaric acid	0.5
SSL	0.375
Emulsifier	0.375
Calcium propionate	0.375
L-cysteine	40 ppm
	0.004
Canola oil	10

¹ Water addition based on optimal dough handling properties

Table 2. Properties of Tortillas made with 100% Wheat Flour and 25%/75% Red Lentil (RL) or Roasted Red Lentil (RRL) Flour and Wheat Flour

Flour Type	Diameter (cm)	Thickness (mm)	Brightness (L*)	Redness (a*)	Firmness (g)	Rollability (Day 8)/5
100% Wheat	17.6	2.6	82.9	-0.2	436	4.3
25/75% RL/Wheat	17.5	2.5	73.9	2.5	432	2.3
25/75% RRL/Wheat	17.3	2.3	74.9	5.1	381	3.3

Results and Recommendations

A 7% increase in water was the only adjustment needed when red lentil flour was incorporated in tortilla formulation. The roasted red lentil flour exhibited superior dough handling properties with reduced stickiness and better cohesiveness compared to the untreated red lentil flour.

The inclusion of 25% red lentil flour, both roasted and untreated, in tortilla formulations increased the dietary fibre, protein and vitamin and mineral content compared to a formula using 100% wheat flour. Not surprisingly, the colour of the tortillas changed with the addition of red lentil flour. The addition of roasted red lentil flour altered the texture making them easier to puncture compared to tortillas made with untreated red lentil flour and 100% wheat flour. Although both red lentil flours reduced rollability, tortillas containing roasted red lentil flour had rollability scores closer to the wheat tortillas when tested 8 days after processing suggesting that the roasting of red lentil flours may contribute to improved or extended shelf life. The differences observed when comparing roasted and untreated red lentil flour in tortillas are an indication that roasting or thermal pretreatments of lentil flours may be beneficial in improving shelf life, nutrition and end quality of tortillas formulated with these ingredients.

Nutrition Facts for Tortillas Formulated with 100% Wheat Flour (left) and 25/75% Red Lentil Flour/Wheat Flour (right)

Nutrition Facts	
Valeur nutritive	
Serving Size (35 g) / Portion (35 g)	
Amount Teneur	% Daily Value % valeur quotidienne
Calories / Calories 100	
Fat / Lipides 2g	3%
Saturated / saturés 0.2g + Trans / trans 0g	1%
Cholesterol / Cholestérol 0mg	
Sodium / Sodium 160mg	7%
Carbohydrate / Glucides 16g	5%
Fibre / Fibres 1g	4%
Sugars / Sucres 0g	
Protein / Protéines 3g	
Vitamin A / Vitamine A	0%
Vitamin C / Vitamine C	0%
Calcium / Calcium	4%
Iron / Fer	2%
Folate / Folate	8%

Nutrition Facts	
Valeur nutritive	
Serving Size (35 g) / Portion (35 g)	
Amount Teneur	% Daily Value % valeur quotidienne
Calories / Calories 140	
Fat / Lipides 3g	5%
Saturated / saturés 0.3g + Trans / trans 0g	2%
Cholesterol / Cholestérol 0mg	
Sodium / Sodium 230mg	10%
Carbohydrate / Glucides 21g	7%
Fibre / Fibres 2g	8%
Sugars / Sucres 0g	
Protein / Protéines 5g	
Vitamin A / Vitamine A	0%
Vitamin C / Vitamine C	0%
Calcium / Calcium	4%
Iron / Fer	15%
Folate / Folate	25%

CONTACT US

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Project Partners and Funders

