

Prototype Development of Avocado-Powder based Food Concepts

TORTILLA WRAP (BAKERY)



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Prepared for: OVAVO

Prepared by: Kallpanna Gunasakaran/ Dr Michael Parker

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Massey University, Private Bag 11222, Palmerston North, New Zealand

3.2 Tortilla

3.2.1 Product Background

Addition of fat into tortillas and similar products aid in increasing product softness as it has a leavening effect at higher melting points (Swanson, 2003). The substitution of oil with avocado powder was tested to identify if similar softness can be achieved in tortillas.

3.2.2 Prototype Development

Oil composition in the control sample was 5%. Partial substitution of canola oil with avocado powder was experimented, using the methodology found in Appendix B. The powder was solubilised in the oil phase, before adding into the flour mixture. This avoided any premature oxidation and ensured the powder was well combined into the dough. Two levels of substitution, 2% and 2.5% avocado powder were used in formulation 3 and formulation 4. The dough was rolled out using a pastry sheeter to achieve 2mm thickness and cut into rounds 16cm in diameter.

Ideal addition rate was 2.0%; final formulation can be found in Table 1 below. The estimated nutrition information panel (NIP) of the final product can be found in Table 2 below.

Table 1. Final formulation for tortilla

Ingredients	Composition (%)
All Purpose Flour	61.40
Baking Powder	0.60
Iodised Salt	0.60
Canola Oil	1.80
OVĀVO Avocado Powder	1.30
Warm Water (45°C)	34.3

Table 2. Nutritional Information Panel for tortilla

Nutrient	Reference value (per 100g)
Energy (kJ)	1005.8
Protein (g)	7.0g
Total Fats (g)	3.2g
- Saturated fats (g)	0.2g
Carbohydrates (g)	44.0g
Sodium (mg)	307mg

3.2.3 *Effects of avocado powder addition on tortilla*

The addition of avocado powder in tortilla yielded final tortillas that were more foldable and softer than the control. Once cooled, formulation 4 (2.5% avocado powder) yielded a tortilla that was quite tough and not very elastic. Formulation 3 (2% avocado powder) retained softness and was quite fluffy, upon cooling, compared to the control.

The dough was wrapped in plastic cling-wrap and left at room temperature for 24 hours. The avocado powder oxidised to cause a small amount of surface browning of the dough. There was no difference in browning intensity at increasing levels of avocado powder. Moreover, there were no significant changes in appearance, flavour or texture in the final product once the dough was mixed. Clean label natural plant extracts can be used to increase intensity of green if desired.

4.0 Focus Group Study

4.1 Objective

The objective of this element of project was to understand how well an avocado powder would be received by consumers by itself and in prepared applications. Prototype products were developed and presented to avocado consumers in focus group discussions to gather a broad range of consumer opinion on the prototypes, as well as further insights into potential avocado powder-containing products.

Twenty-four regular avocado consumers aged 18 to 65 were recruited from the Palmerston North community to participate in focus group discussions (5 to 7 per focus group) for one 90 minute discussion & tasting. This was conducted through FEAST, Massey’s sensory professional team.

4.3 Results

4.3.1 *Participant avocado consumption habits*

Consumption habit discussion summarised in detail in Table 3, which is ordered from left to right of most frequently mentioned to least frequently mentioned. Key themes included highest consumption of avocado during the season “when the price is low”, with most participants purchasing from the supermarket. Whilst some participants reported consuming avocado on its own “as a fruit”, the majority reported consuming avocado in combination with other foods, which included on toast, in sushi, or “as a smoothie”. Participants generally consumed avocado because it is healthy, with many mentioning “healthy fats”. Other important reasons were “good taste”, “good texture” and “satiating”. Another key insight was that purchase of NZ grown avocados was appealing to many participants due to the environmental impact of imported avocados and avocado plantations in South America.

Table 3. Participant avocado consumption habits based on all focus groups

Section	Individual terms used by participants
Frequency	1-2 times a week, when in season, once in 2 weeks, once a month,
Purchase Location	Supermarket, Fruit and vegetable shop, farmers market, own garden

Usage occasion	Guacamole, toast with eggs, bacon, tomatoes, on its own, with honey/sugar/salt/soy sauce/vinegar/wasabi/sesame oil, in salad, as a smoothie, kebab, sushi, avocado oil
Reasons for consumption	Healthy, healthy fats, tasty, satiating, mild flavour, locally produced, substitute for dairy/butter, in sandwich, good protein, neutralises strong flavours
When	Breakfast, Snack, Lunch, Dinner

4.3.2.1 Tortilla

The tortillas were made and served on the day of the focus group. Serving size was tortillas of 8cm diameter in sealed plastic bags, with code stickers. Participants were instructed to consume as much or as little as they preferred. Final water activity of the product was 0.85.

Participants evaluated the appearance to be as expected for the product category, with some participants finding that it looked “homemade” and “just right – not too dark or too light”, which was appealing for them. In terms of texture, some participants reported it to be “hard to chew”, others described it to be as expected for a “Mexican flat bread”. In terms of flavour, the most mentioned attributes were “bland” and “no avocado flavour” with participants stating that the flavour was “normal” for this product category. Participants suggested that they would prefer the tortilla to be green, with softer texture and recognisable avocado flavour. The ‘goodness of avocado’ as a sub-ingredient was suggested, as opposed to being the main tortilla ingredient.

5.0 Recommendations

5.2 Tortilla

Partial oil substitution of 2% avocado powder yielded a soft and fluffy texture with no impact on colour or cooking time. This also allows reduction in the amount of oil required, which is currently 5%.

Powder should be solubilised in oil, before addition to dough mixture, making sure the powder is completely combined with the dough.

Further trials on pita breads, naan breads or any wrap type breads is a good starting point. Different flavour combinations can be experimented with avocado powder as a flavour contributor.

Methodology of Development for Tortilla

Table 4. Ingredient list for tortilla

Ingredients	Composition (%)
All Purpose Flour	61.40
Baking Powder	0.60
Iodised Salt	0.60
Canola oil	1.80

OVAVO Avocado Powder	1.30
Warm Water	34.3

Table 5. Recipe for Tortilla

1.	All Purpose flour, baking powder and salt were added to the bowl of a Kenwood stand mixer. Dry mix on min setting the ingredients until combined, for a few seconds
2.	Weigh out required amount of water and hold it at 45°C. Mix avocado powder and oil to form a slurry and set aside
3.	While the mixer is on medium speed (setting 3), water and oil mixture were added. They were mixed for 2 minutes until dough was formed.
4.	The speed was lowered to setting 1 and dough was mixed for 3 minutes, until smooth and elastic. The dough must be tacky to touch, but not sticking to hands.
5.	Approximately 5g of flour was added to the bowl and the dough was kneaded for 5 minutes on min setting until smooth and elastic.
6.	The dough was rolled into a ball and covered with a clean kitchen towel. It was rested for 30 minutes under room temperature.
7.	Six 80g dough pieces were separated, to be rolled out in the pastry roller
8.	Each dough piece was rolled out using the pastry maker with respective settings below:
	a. Setting 1: 3 passes
	b. Setting 2: 6 passes
	c. Setting 3: 2 passes
9.	Once the dough was flat, the thickness was measured, keeping it consistent 2mm.
10.	Stamp out tortillas of 16cm diameter