

20120620 - Simulation: nutritional balance of breakfast meals - 2012

[Data] [[<Normal page](#)] [**PEREZGONZALEZ Jose D (2012)**. *Simulation: nutritional balance of breakfast meals*. Journal of Knowledge Advancement & Integration ([ISSN 1177-4576](#)), 2012, pages 152-154.]

Breakfast meals' BNI (simulation)

This article presents the results of a simulation on the nutritional balance of breakfast meals, carried out as part of a research on the nutritional composition of breakfast in New Zealand. A breakfast meal is understood as a combination of breakfast cereals with water⁶, milk, non-dairy milk or yogurt.

Illustration 1 collates the [Balanced Nutrition Index™ \(BNI™\)](#) for each simulated meal. Although all meals balanced out at least one ingredient, only 53% of the meals improved the nutritional balance of both ingredients. Non-dairy milks produced more balanced meals, overall, followed by natural yogurt and non-flavored dairy milk. Among yogurts and milk, low-fat options (but not fat-free ones) were the most balanced of all. Meanwhile, flavored milks and yogurts might have become more balanced as part of a meal but were poorer options than unflavored ones. Regardless of above, an oat meal made with water (eg, porridge) was the most balanced breakfast meal in the simulation, and oats resulted in more balanced meals when using any milk, non-dairy milk or yogurt than any other breakfast cereals.

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Illustration 1: BNI of breakfast meals (simulation)

Food product			Oat	Muesli	Wheat	Corn	Rice	Bran
	Serving		37g	46g	32g	29g	30g	32g
		BNI	8.70	23.82	31.11	78.35	80.03	121.81
Standard oatmilk	250ml	16.91	9.82	12.15	13.60	22.26	23.61	15.85
Low-fat soymilk	250ml	26.77	10.10	22.45	17.11	25.51	29.77	33.77
Standard ricemilk	250ml	38.13	19.80	29.21	30.13	43.26	44.75	36.57
Standard soymilk	250ml	48.17	14.04	20.71	12.96	19.99	23.56	36.86
Fat-free soymilk	250ml	52.32	18.30	25.06	30.88	38.72	38.97	45.81
Low-fat natural yogurt	150g	54.72	18.51	30.42	26.64	36.87	41.22	51.85
Low-fat flavored soymilk	250ml	64.29	34.20	42.11	41.61	50.13	53.34	56.39

Standard natural yogurt	150g	67.50	25.72	33.44	32.06	42.23	45.76	51.93
Creamy natural yogurt	150g	77.49	37.10	42.10	43.16	51.84	55.36	59.64
Standard cow milk	250ml	88.42	43.23	47.94	49.68	57.29	60.09	65.21
Fat-free flavored yogurt	150g	90.26	27.57	38.50	36.82	49.56	53.84	68.05
Low-fat flavored yogurt	150g	91.56	44.83	51.79	53.70	64.10	67.29	74.12
Semi-skimmed cow milk	250ml	92.68	31.93	40.57	39.90	49.38	52.97	64.95
Standard flavored soy yogurt	150g	92.90	49.98	54.81	58.28	67.49	71.06	74.53
Creamy flavored yogurt	150g	94.19	46.09	50.10	52.75	61.41	64.88	71.11
Standard flavored yogurt	150g	95.20	46.41	50.40	53.12	61.81	65.28	71.71
Semi-skimmed flavored cow milk	250ml	101.11	51.57	56.95	59.36	66.94	69.73	77.20
Standard flavored cow milk	250ml	104.13	56.73	59.60	63.30	69.96	72.78	77.99
Skimmed cow milk	250ml	122.85	40.70	47.02	51.12	58.37	62.14	84.88
Fat-free natural yogurt	150g	125.80	33.50	43.65	44.29	56.80	61.02	85.78

(White cells show improved BNIs for one ingredient; grey cells show improved BNIs for both ingredients)

Methods

Research approach

Exploratory study.

Data

The initial research sample included average nutrition data for 6 categories of breakfast cereals (see Perezgonzalez, 2012⁵) and 20 types of non-dairy milks, dairy milks and yogurts (see Perezgonzalez, 2011b², 2011c³, 2011d⁴).

Materials & analysis

Relevant data were used to run a simulation combining ingredients to make a meal according to the following parameters:

- a serving of 250ml of milk or non-dairy milk, or a serving of 150g of yogurt, as first ingredient

- a serving of cereals amounting to approximately 1 cup as second ingredient.

The resulting meal was then assessed using the [Balanced Nutrition Index™ \(BNI™\)](#) technology (see [Perezgonzalez, 2011a¹](#)). SPSS-v18 was used for the computation of variables, including BNI and international indexes.

Generalization potential

This simulation was based on average nutrition data per ingredient, taken from related research. It provides a reasonable assessment of nutritional balance as per the serving sizes used. Thus, the results of this study may be taken as representing the average nutritional balance of real breakfast meals.

As breakfast cereals and milks and yogurts were made in NZ or imported from Australia, the results of this study may be generalizable to the following populations (in order of decreasing generalization power):

- Australia.
- Internationally, if one assumes breakfast cereals, milks and yogurts to be of approximately similar nutritional composition anywhere.

References

1. **PEREZGONZALEZ Jose D (2011a)**. [Balanced Nutrition Index™ \(BNI™\)](#). Journal of Knowledge Advancement & Integration ([ISSN 1177-4576](#)), 2011, pages 20-21. Also retrievable from [Wiki of Science](#).
2. **PEREZGONZALEZ Jose D (2011b)**. [Milking veggies](#). The Balanced Nutrition Index ([ISSN 1177-8849](#)), 2011, issue 5.
3. **PEREZGONZALEZ Jose D (2011c)**. [White gold](#). The Balanced Nutrition Index ([ISSN 1177-8849](#)), 2011, issue 6.
4. **PEREZGONZALEZ Jose D (2011d)**. [Yogurts galore](#). The Balanced Nutrition Index ([ISSN 1177-8849](#)), 2012, issue 1.
5. **PEREZGONZALEZ Jose D (2012)**. [Breakfast cereals](#). The Balanced Nutrition Index ([ISSN 1177-8849](#)), 2012, issue 3.

+++ **Notes** +++

6. The BNI of dry cereals can also be taken as the BNI of the corresponding breakfast meal when using plain water as the second ingredient

Want to know more?

[BNI™ database](#)

The database offers individual nutrition analyses for foods, including the ingredients referred to in above article.

[Wiki of Science - Nutritional balance of breakfast cereals](#)

This Wiki of Science page collates information about breakfast cereals, and provides useful links to the appropriate files.

[Wiki of Science - Nutritional balance of milk and yogurt types](#)

This Wiki of Science page collates information about milk, non-dairy milk and yogurt, and provides useful links to the appropriate files.

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