

Nutrient Profiling of Snack Bars According to Indonesian Healthier Choice Criteria

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ABSTRACT

This study aims to evaluate the nutrient profiling profile of snack bars according to Indonesian healthier choice criteria for healthier choice. Snack bars were purchased and classified into soy-, cereal-, and other-based snack bars. Nutritional information were compared with the healthier choice criteria. Soy-based snack bars had the highest protein content (20.94 ± 6.12 g/100 g) compared to others-based snack bars (11.21 ± 5.13 g/100 g) and cereal-based snack bars (8.36 ± 3.55 g/100 g) with $p < 0.001$. Others-based snack bars (15.30 ± 5.54 g/100 g) had the highest dietary fiber content compared to soy-based (8.91 ± 2.11 g/100 g) and cereal-based snack bars (7.06 ± 3.26 g/100 g) with $p < 0.001$. Only two snack bars passed the criteria as “healthier choice” while others need to be reformulated to pass the criteria.

Keywords: dietary fiber, grain, healthier choice criteria, protein, soy

INTRODUCTION

Non-communicable diseases are major leading cause of death accounting for 74% of total deaths globally (WHO 2022). The nutritional information can be used for nutrient profiling in processed foods and beverages. Nutrient profiling helps the consumers to choose healthier products in similar food groups. In 2021, the National Agency of Drug and Food Control (BPOM) released the healthier choice logo criteria (BPOM 2021). The trend of snack bar consumption is becoming popular, particularly among young adults. Snack bars provides whole grain cereals, nuts, and fruits that are rich in macronutrients, bioactive compounds, and dietary fiber. However, the addition of sugar and fat in snack bar may influence the final nutrition nutrient content in it. Meanwhile, only a few studies have reported the nutrient profile of snack bar, particularly in Indonesian market. Therefore, this study aimed to evaluate the nutrient profile of snack bars according to Indonesian healthier choice criteria.

METHODS

This research is a cross-sectional study. Data collection was conducted from March to -April 2022. Snack bars available in offline

stores in Jakarta area and in online stores were purchased. The eligibility criteria were snack bars, protein bars, or energy bars that were produced locally and/or locally available and provided nutritional information. The samples were categorized into three groups based on their ingredients: soy-based, cereal-based, and others-based snack bar. The soy-based and others-based snack bars should meet the criteria established by the Indonesian Food and Drug Authority (BPOM) as a “special bakery product”, while the cereal-based snack bars should meet the criteria as a “ready-to-eat cereals with whole grain”.

Serving size and nutritional information, including total energy, total fat, saturated fat, total sugar, sodium, dietary fiber, and protein, were extracted from the packaging of each snack bar. Nutrients were calculated per 100 g. Criteria for healthier “special bakery product” were total fat and sugar < 20 g/100 g, salt < 300 mg/100 g, and fiber > 3 g/100 g. Criteria for healthier “ready-to-eat cereals with whole grain” were total fat < 10 g/100 g, sugar < 20 g/100 g, salt < 300 mg/100 g, and fiber > 3 g/100 g (BPOM 2021). One-way ANOVA and Tukey's HSD post-hoc test were used to analyze the nutrient content among the three snack bar categories ($\alpha = 0.05$). Data analysis were performed by using Microsoft Excel 365 and SPSS.

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RESULTS AND DISCUSSION

A total of 38 snack bars were collected, of which only 28 (7 soy-based snack bars, 11 cereal-based snack bars, and 10 others-based snack bars) were eligible to be included in this study. Table 1 shows the nutritient composition for each snack bar categories.

Soy-based snack bars had higher saturated fat than others-based snack bars because of the addition of butter, which is high in saturated fat. Dietary fiber was the highest in the others-based category due to its main ingredients (e.g., fruits, nuts, seeds), which are high in dietary fiber (Cui *et al.* 2019). Lastly, soy-based snack bars had higher protein compared to cereal-based and others-based snack bars due to the presence of soy as its the main ingredient (Medic *et al.* 2014). The amount of protein in 100 g of soybean is about 36.5 g (U.S. Department of Agriculture,

Agricultural Research Service (USDA ARS) 2019).

Indonesian healthier choice criteria

There were only two snack bars (SB-1 and SB-2) that met the Indonesian Healthier Choice criteria. Both snack bars were categorized as soy-based snack bars. Most of the soy-based snack bars only met 2 out of 4 healthier choice criteria because they exceeded the maximum total fat and sugar content. Meanwhile, most of the others-based snack bars met 3 out of 4 healthier choice criteria (Figure 1a). Four of the others-based snack bars exceeded the limit for total fat and salt content making them failed to meet all the criteria. Both categories of snack bars met the criteria for fiber content.

Most of the cereal-based snack bars met 1 out of 3 criteria for healthier choice (Figure 1b). All of cereal-based snack bar met the criteria

Table 1. Nutritional composition of different snack bar categories in Indonesia (per 100 g)

Nutrients	Soy-based snack bar	Cereal-based snack bar	Others-based snack bar	p-value
Total energy (kcal)	472.46±57.09	451.35±40.87	443.88±62.33	0.550
Total fat (g /100 g)	23.67±11.51	18.37±3.55	18.41±9.5	0.504
Saturated fat (g /100 g)	11.57±5.64 ^a	9.38±2.31 ^{ab}	6.10±3.95 ^b	0.026 [*]
Total protein (g /100 g)	20.94±6.12 ^a	8.36±3.55 ^b	11.21±5.13 ^b	<0.001 [*]
Total sugar (g /100 g)	19.03±10.98	25.99±8.16	27.91±4.66	0.085
Total fiber (g /100 g)	8.91±2.11 ^a	7.06±3.26 ^a	15.3±5.54 ^b	<0.001 [*]
Sodium (mg /100 g)	174.18±115.1	122.89±71.50	110.25±91.73	0.355

^{a,b}Different superscript letters on the same row indicates significant differences (p<0.05)

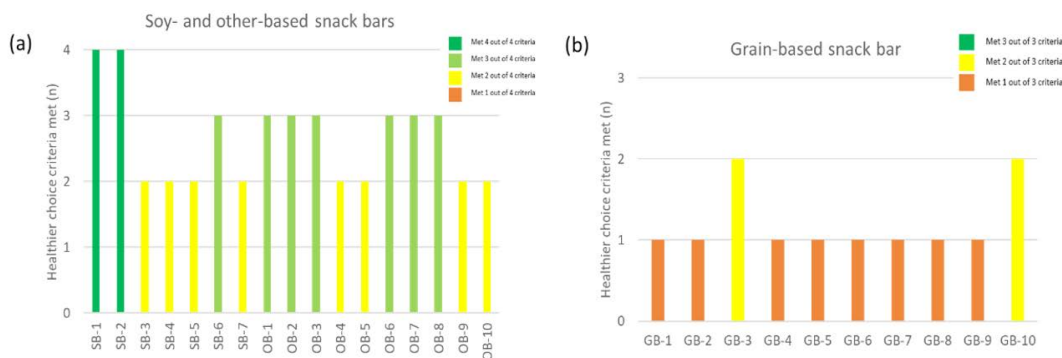


Figure 1. Number of healthier choice criteria met by soy-based and others-based snack bars (a); cereal-based snack bar (b)

for dietary fiber, while only 2 products met the criteria for sugar content. Meanwhile, all of the cereal-based snack bars were exceeded the criteria for fat content.

CONCLUSION

Only two out of 28 snack bars met the Indonesian Healthier Choice criteria, while the rest exceeded the limits for fat, sugar, or salt content due to additional ingredients used in the formulation. Reformulation of snack bar is needed to create snack bars with healthier nutrient profile.

DECLARATION OF CONFLICT OF INTERESTS

The authors declare no conflicts of interest in the preparation of this manuscript.

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