

The Effect of Various Sugars in Seaweed Drinks

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Abstract

Seaweed products usually have less palatability in their taste, even though they are healthy and nutritious. Thus, this study aims to develop seaweed drinks with various sugars, followed by the evaluation of sensory, physicochemical, and nutritional compositions for the highest overall acceptability. Eighteen formulations were prepared by varying the amount of sugar that was designated using Design Expert 13.0 software. The most accepted sample was sample 12, which contained 12.5% 'Gula apong', 62.5% gula melaka, 12.5% rock sugar, and 12.5% monk fruit. Sample 12 was characterised for its physicochemical properties, including pH and brix, with 3.60 and 14.33, respectively. The nutritional composition, such as protein content, total dietary fibre, sodium, fat, total sugar, and total carbohydrate, were proximate using the AOAC method. The energy value was determined using a Codex-specific calculation. Moreover, the beverage was found to have nutritional content (carbohydrate (12.60 g), energy (50 kcal/100g), total sugar (10.30g), and sodium (4.95 mg)). The sample 12 can be stated as free of fat because of the value of fat (<0.10), which can give benefits to the consumer. To conclude, the various sugars formulated in seaweed drinks are accepted by the consumer, and the seaweed *Gracillaria changii* can be utilised.

1. Introduction

The seaweed market in Malaysia has been growing in recent years, with seaweed being exported to various countries around the world. However, the seaweed industry in Malaysia is still in its infancy stage, despite efforts by the government to enhance the value chain by imposing seaweed standards for farm management, dried seaweed, and semi-refined carrageenan [1]. *Gracillaria Changi* was a one of seaweed species that can be found in Malaysia. It contains a variety of minerals, including sodium (Na), potassium (K), magnesium (Mg), calcium (Ca), iron (Fe), zinc (Zn), copper (Cu), and selenium (Se). Among the macro minerals, K and Na were the most abundant in *Gracillaria changii*, with the K concentration being 8 times higher than its Na concentration [2]. This seaweed is an excellent source of minerals, which can provide several health benefits to humans due to the essential roles these minerals play in the body. This shows the seaweed is suitable to be innovated into new drinks that can be healthier choices.

A formulation is needed to develop a new botanical-based product with high palatability. However, the addition of various sugars to these drinks could have a significant impact on their taste and nutritional value. In this study, the seaweed drinks with various sugar have been developed by formulating the amount of various sugar as well as the ingredients. The various sugars, namely gula apong, gula melaka, rock sugar, and monk fruit, on the taste and nutritional value of seaweed drinks made with *Gracillaria Changi*. Gula Apong, derived from the sap of the nipah palm tree, imparts a distinctive caramel-like flavour to Southeast Asian cuisines [3]. Notably, it contains trace amounts of essential vitamins and minerals, potentially featuring a lower glycaemic index than

refined sugar. Beyond its sweetening properties, Gula Apong's unique flavour profile enhances various dishes and beverages, contributing to the culinary diversity of the region. Similarly sourced from palm sap, Gula Melaka stands out with its rich, smoky flavour, complemented by hints of caramel and toffee [4]. This palm sugar variant not only offers a lower glycaemic index compared to refined sugar but also boasts nutritional benefits, containing essential minerals like potassium and iron. Widely utilised in culinary applications, Gula Melaka provides a complex taste dimension to dishes, making it a favoured choice in Southeast Asia and beyond. On the other hand, monk fruit, extracted from a small green gourd native to Southern China, serves as a natural sweetener several times sweeter than sugar, with the added advantage of having zero calories [5]. Its sweetness does not impact blood sugar levels, making it a suitable option for individuals with diabetes or those watching their calorie intake. Furthermore, monk fruit lacks the aftertaste associated with some artificial sweeteners, enhancing its appeal as a versatile sugar substitute in various recipes. In contrast, rock sugar, crystallised sucrose typically derived from sugarcane or sugar beets, offers simple sweetness in the form of large, translucent crystals [6]. While versatile and suitable for both sweet and savoury dishes, rock sugar does not provide significant nutritional benefits compared to the other sweeteners mentioned. Each of these sweeteners, Gula Apong, Gula Melaka, Monk Fruit, and Rock Sugar, brings its own set of characteristics and applications to the diverse world of culinary delights.

This study aimed to determine the sugar formulation for seaweed drinks that provided the best taste and nutritional value. To achieve this, we analysed the pH, Brix, and sensory properties of the seaweed drinks. The best formulation of the product was chosen based on the overall acceptability of the sensory evaluation. The sensory characteristics of food can be influencing consumer preference of food substances [7]. The results of this study provided valuable insights into the use of different sugars in seaweed drinks and their potential health benefits.

2. Materials and Methods

2.1 Materials

In this study, red seaweed (*Gracilaria changii*) was used in the form of dried seaweed. The seaweed was purchased from Laman Alam Jaya, Parit Jawa, Muar. 'Gula apong' was purchased from Langit Collective (M) Sdn. Bhd. 'Gula melaka' and rock sugar were purchased from Lotus Malaysia. Monk fruit purchased from Ketogrocer. Citric acid was purchased from Dchemie Malaysia.

2.2 Methods

2.2.1 Formulation of Various Sugar

The components used were 'gula apong', 'gula melaka', monk fruit and rock sugar, and the mixture proportion was designated using Simplex Lattice mixture design of Design Expert 13.0 and as shown in Table 2. The low and high values used for various sugars in the formulation were 0% and 100% respectively. The mixture was standardized at 100% of the formulation. The seaweed beverages contained water content of 93.88–94.00%. Each treatment consisted of a uniform mixture of one percent seaweed and five percent sugar. The implementation of a 1% concentration of seaweed was derived from the research findings outlined in [8]. The research findings indicate that the inclusion of 2% of *Gracilaria changii* seaweed led to a range of agar content, varying from 22.1% to 41.7%. The intended addition of 1% seaweed was chosen to prevent the seaweed beverage from undergoing gelation into agar during prolonged storage periods. The five percent sugar was kept uniformly in each sample following previous study [9]. Citric acid was used to standardize the drinks for each sample. The use of citric acid was to achieve a consistent taste profile and quality in drinks [10].

Table 1 The formulation used in seaweed drinks

Materials	Value (%)
Water	93.88 – 94.00
Sugar	5
Seaweed	1
Citric acid	0.00 – 0.12

Table 2 Design layout and experimental results

Formulation	'Gula Apong' (%)	'Gula Melaka' (%)	Rock Sugar (%)	Monk Fruit (%)
*1	100	0	0	0
#2	0	100	0	0
^3	0	0	100	0
4	0	0	0	100
5	50	50	0	0
6	50	0	50	0
7	50	0	0	50
8	0	50	50	0
9	0	50	0	50
10	0	0	50	50
11	62.5	12.5	12.5	12.5
12	12.5	62.5	12.5	12.5
13	12.5	12.5	62.5	12.5
14	12.5	12.5	12.5	62.5
15	25	25	25	25
*16	100	0	0	0
#17	0	100	0	0
^18	0	0	100	0

2.2.2 Sample Preparation for Seaweed Drinks with Various Sugar

Dried seaweed was used to develop seaweed drinks. The preparation of the seaweed extract was conducted following the method described in [11], with minor adjustments. Initially, a quantity of 2 g of dried seaweed was gradually cooked by heating it to a boil with a volume of two hundred ml of water. Subsequently, let it reach a boiling point and maintain it for a duration of 10–15 minutes. Subsequently, the extracts underwent filtration utilising a fine-mesh strainer to segregate the liquid from the solid seaweed particles. Ultimately, to create seaweed beverages with different types of sugars, the extract was combined with a 5% sugar mixture, adhering to the sugar ratios outlined in Table 1.

2.2.3 Preparation for Sensory Evaluation of Seaweed Drinks with Various Sugar

Each seaweed drink sample was prepared using 9 ml of the drink. The samples were prepared at a chilled temperature and coded with a 3-digit number. The samples were then placed on a tray with a cup of water. Panellists were provided with a link to a Google form to fill out a sensory evaluation for each seaweed drink formulation that was served.

2.3 Sensory Evaluation

Sensory evaluation of seaweed drinks with various sugar was conducted on 50 panellists, using a 9-point hedonic rating scale. The 18 seaweed drinks samples were prepared, where each sample (9 ml) was prepared chilled temperature and coded with 3-digit number. Then, nine different samples of seaweed drinks were served to each panellist at a time. For palate cleansing, a glass of water was provided. The seaweed drinks with various sugar samples were evaluated on sensory attributes of taste, colour, aroma, appearance, aftertaste, and overall acceptance. The 9-point hedonic scale was employed for each attribute, where 1 = dislike extremely, 5 = neither like nor dislike, and 9 = like extremely, according to the preferences of taste, colour, aroma, appearance, aftertaste, and overall acceptance [12].

2.4 Physicochemical Analysis

2.4.1 pH

The pH (acidity) of the samples was evaluated using a process illustrated by [13]. The pH electrode was dried with a tissue following its rinsing with distilled water. The electrode was immersed in a 50 mL sample solution and the pH of the sample was recorded when the value was determined. The pH measurement was conducted using the Sanxin SX751 pH metre.

2.4.2 Brix

The seaweed drinks' brix content was analysed three times. The samples were collected, and two droplets were placed onto a refractometer prism calibrated using sterile distilled water. The observations were made on the refractometer scale reader screen. The measurement of brix was conducted using an Atago PAL-BX/RI pocket refractometer.

2.5 Nutritional Composition

2.5.1 Protein Content

Protein content was quantified using Kjeldahl technique [14]. The seaweed drink sample was weighed. The digestion process was done by mixing concentrated H_2SO_4 with the sample in digestion flask and heat was applied. Then, the mixture was neutralized with NaOH. The product was then distilled using steam distillation. It was then collected in a flask containing a recorded volume of boric acid. The mixture was titrated with 0.1 mol HCl with phenolphthalein. The crude protein was calculated according to equation 1.

$$\% \text{Nitrogen} = \left[\frac{ml(\text{titre} - B) \times M \text{ HCl} \times \text{dilution factor} \times 14.007}{(\text{mg sample} \times 10)} \right] \times 100 \quad (1)$$

where:

M HCl= Molarity of hydrochloric acid

B = Blank

$$\text{Dry weight (D. Wt)} = \text{Wet weight (W. Wt)} \times \left[\frac{(100 - \text{moisture percentage})}{100} \right] \quad (2)$$

$$\text{Wet weight (W. Wt)} = \text{Dry weight (D. Wt)} \times \left[\frac{(100 - \text{moisture percentage})}{100} \right] \quad (3)$$

$$\% P = \% N \times CF \quad (4)$$

where:

% P = Protein

% N = Nitrogen

CF = Conversion Factor

2.5.2 Total Dietary Fiber Content

The AOAC 985.29 (2000) technique was used to calculate dietary fibre content through enzymatic-gravimetric analysis using equation (5) [13]. Commencing with a representative sample, the seaweed drink undergoes homogenization to ensure uniformity, followed by enzymatic digestion employing a combination of protease, amylase, and amyloglucosidase to selectively break down interfering substances, leaving dietary fiber intact. The resulting solution is subjected to filtration to separate the insoluble dietary fiber, which is subsequently washed, dried to a constant weight, and then subjected to gravimetric analysis. The weight of the dried fiber is indicative of the total dietary fiber content and is expressed as a percentage of the sample's weight [14].

$$\text{Total Dietary Fiber} = \left[\frac{\text{weight residue-protein-ash-blank}}{\text{weight test portion}} \right] \quad (5)$$

2.5.3 Total Fat Content

The Soxhlet extraction method for determining fat content required a sequence of procedure stages. A 2g sample of seaweed drink was weighed and then extracted using petroleum ether. The extraction procedure lasted for a duration of 6 hours and maintained at a specific boiling temperature of approximately 60–70 degrees Celsius for petroleum ether. In the meantime, the fat-solvent mixture was evaporated, and the residual fat was quantified by weighing [14]. The calculation using equation (6) is stated as below.

$$\text{Fat (\%)} = \frac{\text{weight of fat}}{\text{weight of sample}} \times 100 \quad (6)$$

2.5.4 Total Carbohydrate

The total carbohydrate content in developed seaweed drinks was analysed using AOAC (2000) method. The total carbohydrate was obtained by proximate analysis after obtaining other components such as moisture, fiber, fat ash and protein content. The remainder after subtracting from 100% composition is the total carbohydrate. The calculation as shown at equation (7) [14].

$$\text{Total carbohydrate (\%)} = 100 - \% \text{ of (protein + moisture + ash + total fat + fiber)} \quad (7)$$

2.5.5 Energy Value

The energy content of seaweed was determined using Codex specific methodology, which involves multiplying fat, protein, and carbohydrate quantities by their physiological energy values (see equation (8)) [19], [20].

$$\text{Energy (kcal/100g)} = (9 \times \text{fat}) + (4 \times \text{protein}) + (4 \times \text{total carbohydrate}) \quad (8)$$

2.5.6 Total sugar

Quantification of total sugars in the seaweed drinks with various sugar was determined using AOAC 923.09 (2000). Standardization of sucrose solution was performed before sample analysis. 100 ml of seaweed drink and neutralized with 1N NaOH. Then, the sample was boiled for 1 hour while stirring and made up to 500 ml after cooling. The solution was filtered, and 100 ml aliquot was transferred into a burette. Later, 10 ml mixture of copper sulphate solution and alkaline tartrate solution were placed into a flask. The flask was heated on hot plate for 2 minutes. While heating, 1 ml 0.2% aqueous methylene blue solution was added and volume for complete titration by small additions (2-3 drops) of sample solution (from burette) to decolouration of indicator was recorded [14].

2.5.7 Sodium

The sodium content in seaweed drinks could be achieved through various analytical methods, and one commonly used technique was Atomic Absorption Spectroscopy (AAS). In this method, a representative sample of the seaweed drink was prepared. The sample solution was then introduced into a flame in the AAS instrument. The flame atomized the sodium present in the sample, and a monochromatic light source at the resonance line of sodium at 589.0 nm was passed through the flame. The amount of light absorbed by the sodium atoms was

measured, and the sodium concentration in the seaweed drink was determined by comparing the absorption to a calibration curve prepared using known sodium standards [14].

3. Results and Discussion

3.1 Sensory evaluation

Previously, 'gula apong', 'gula Melaka', rock sugar, and monk fruit were chosen as the variable ingredient in seaweed drinks with 18 formulations using 50 panellists. Table 3 showed the result of sensory evaluation using hedonic test [12].

Table 3 Sensory results of Seaweed Drinks with Various Sugar

Sample Number	Sensory parameter				
	Colour	Aroma	Taste	Aftertaste	Overall acceptability
*1	6.34 ± 1.85	5.70 ± 1.59	5.59 ± 1.25	5.90 ± 1.90	5.82 ± 1.89
#2	5.74 ± 1.72	5.82 ± 1.89	5.26 ± 1.86	5.36 ± 1.94	5.23 ± 1.93
^3	4.06 ± 2.01	3.36 ± 2.00	4.48 ± 1.85	4.56 ± 1.99	4.15 ± 2.17
4	4.26 ± 2.09	3.82 ± 2.02	4.98 ± 2.03	4.64 ± 1.97	4.75 ± 1.93
5	5.78 ± 2.17	5.74 ± 2.10	5.67 ± 1.98	5.44 ± 1.94	5.74 ± 1.98
6	6.20 ± 1.81	5.46 ± 1.71	5.36 ± 1.81	5.30 ± 1.87	4.80 ± 1.90
7	6.60 ± 1.55	5.58 ± 2.01	5.28 ± 2.06	5.26 ± 1.99	5.60 ± 2.01
8	4.72 ± 1.83	4.86 ± 1.81	5.96 ± 1.83	5.90 ± 1.99	5.70 ± 1.85
9	4.82 ± 2.01	4.44 ± 1.94	4.50 ± 1.99	4.10 ± 2.08	4.90 ± 1.95
10	6.30 ± 1.52	5.20 ± 1.31	5.98 ± 1.15	5.76 ± 1.22	6.04 ± 1.19
11	5.48 ± 1.31	5.58 ± 1.34	5.74 ± 1.26	6.08 ± 1.31	6.18 ± 1.33
12	6.24 ± 1.30	6.26 ± 1.50	6.42 ± 1.07	6.16 ± 0.91	6.48 ± 0.88
13	5.46 ± 1.39	5.92 ± 1.87	5.76 ± 1.94	5.54 ± 1.73	5.78 ± 1.73
14	5.60 ± 1.50	5.20 ± 1.67	5.38 ± 2.06	5.04 ± 1.87	5.48 ± 1.99
15	6.22 ± 1.42	6.08 ± 1.38	5.53 ± 1.25	5.92 ± 1.55	5.84 ± 1.41
*16	5.94 ± 2.08	5.16 ± 1.89	5.34 ± 1.77	5.74 ± 1.95	5.75 ± 1.96
#17	5.90 ± 1.74	5.92 ± 1.87	5.24 ± 1.84	5.38 ± 1.94	5.45 ± 1.91
^18	4.30 ± 2.03	3.80 ± 2.15	4.68 ± 1.94	4.70 ± 2.04	4.87 ± 2.21

Seaweed drinks with greater colour intensity were found to be correlated with enhanced consumer expectations. Sample 7, characterised by its light brown colour, achieved the highest score of 6.60 ± 1.55. Sample 1 had a mean score of 6.34 ± 1.85, which was the second highest. Sample 10 had a mean score of 6.30 ± 1.52. Nevertheless, samples 3 and 4 received lower ratings from the panellists, with an average score of 4.06 ± 2.01 and 4.26 ± 2.09, respectively, as indicated in Table 3. The colour of seaweed drinks is determined by the sweeteners utilised, such as 'gula apong', which contains pigments that influence the colour of the end product.

Sample 12 achieved the highest scent score (6.26 ± 1.50), which was attributed to the combination of 'gula melaka', 'gula apong', rock sugar, and monk fruit. Sample 15 had the second highest mean score (6.08 ± 1.38), while sample 13 had a mean score of 5.92 ± 1.87 . Nevertheless, samples 3 and 18 received lower ratings from the panellists, with an average score of 3.36 ± 2.00 and 3.80 ± 2.15 , respectively. The evaluation of the aroma profile indicated that the aroma of palm sugar had a significant impact on the overall aroma of the product.

Sample 12 achieved the highest taste score (6.42 ± 1.07) among all the samples. The palatability of the flavour heightened with the augmentation of the amount of 'gula melaka'. Sample 12 consisted primarily of 'gula melaka' as the major sugar component, while 'gula apong', rock sugar, and monk fruit were present in equal proportions. The enjoyable flavour of seaweed drink sample 12 was attributed to the unique taste of the 'gula melaka'. With a mean score of 5.98 ± 1.15 , Sample 10 was ranked second highest, while Sample 8 followed closely behind with a mean score of 5.96 ± 1.83 . Nevertheless, panellists found samples 3 and 18 to be less desirable, as indicated by their mean scores of 4.48 ± 1.85 and 4.68 ± 1.94 , respectively.

The study indicates that aftertaste has a significant role in determining the acceptance and quality of a product [16]. Sample 12 exhibited the highest level of acceptability in terms of aftertaste, with a score of 6.16 ± 0.91 . It also imparted a distinct aftertaste that may be described as reminiscent of the smell and flavour associated with the sea [17]. Sample 11 had a mean score of 6.08 ± 1.31 , which was the second highest among the samples. Sample 15, on the other hand, had a mean score of 5.92 ± 1.55 . Nevertheless, panellists rated samples 9 and 3 less favourably, with mean scores of 4.10 ± 2.08 and 4.56 ± 1.99 , respectively. Nevertheless, by adjusting the amount of sugar, the panellists might be able to partially endure the lingering taste sensation.

The panellists' ultimate decision for selecting the most favoured seaweed drinks with different sugars was their overall acceptance. The seaweed drink, accompanied by several sugar samples 12, was well-received by the panellists (6.48 ± 0.88) and received excellent feedback for its distinct and pleasurable taste. Sample 11 had the second highest mean score of 6.18 ± 1.33 , while sample 10 had a mean score of 6.04 ± 1.19 . Panellists rated samples 3 and 4 less favourably, with mean scores of 4.15 ± 2.17 and 4.75 ± 1.93 , respectively. Sample 12 was chosen for nutrition composition analysis due to its greatest overall approval among the samples.

3.2 Physicochemical Analysis

All the eighteen (18) seaweed drinks with various sugar samples were analysed for the physicochemical properties, included pH and brix. Table 4 presented the results of pH and brix of each seaweed drink sample.

The pH values of seaweed drinks with various sugar samples. The pH values ranged from (3.59 ± 0.01 to 3.61 ± 0.02). The difference in pH values among the various samples is negligible due to the standardization of pH in the seaweed drinks. The pH measurement of all the samples rests at 3.60. The pH values of food products can range from 3.5 to 7.0 [15]. The process of standardization involved the utilization of citric acid. However, the quantity of citric acid present in each individual seaweed drinks sample is not uniform. This is attributed to the dissimilarity in both the quantity and variety of sugar employed in each sample.

Table 4 shows that the brix values of seaweed drinks with different sugar samples ranged from (13.67 ± 0.06 to 16.11 ± 0.02). Sample 7 had the lowest brix value (13.67 ± 0.06) among all samples, and it contained 2.5% of 'gula apong' and 2.5% of monk fruit. Samples 3 and 18 had the highest brix values (16.11 ± 0.02) and contained an identical composition of 5% of rock sugar.

Table 4 Experimental results of pH and brix of seaweed drinks with various sugar

Sample Number	pH	Brix
*1	3.59 ± 0.10	15.68 ± 0.04
#2	3.60 ± 0.01	15.26 ± 0.00
^3	3.60 ± 0.01	16.11 ± 0.02
4	3.60 ± 0.01	14.70 ± 0.01
5	3.60 ± 0.01	15.24 ± 0.02
6	3.59 ± 0.01	15.92 ± 0.02
7	3.61 ± 0.02	13.67 ± 0.06
8	3.60 ± 0.01	15.20 ± 0.05

9	3.61 ± 0.01	14.41 ± 0.01
10	3.60 ± 0.01	14.70 ± 0.00
11	3.60 ± 0.01	14.80 ± 0.00
12	3.60 ± 0.01	14.33 ± 0.06
13	3.60 ± 0.00	14.40 ± 0.00
14	3.59 ± 0.01	13.80 ± 0.00
15	3.60 ± 0.01	15.75 ± 0.03
*16	3.59 ± 0.01	15.68 ± 0.04
#17	3.60 ± 0.01	15.26 ± 0.00
^18	3.60 ± 0.01	16.11 ± 0.02

*The data is presented from mean of triplicate determinations ± SD

3.3 Nutritional composition

Based on Table 5, the protein content of sample 12 seaweed drinks is below 5% of the Nutrient Reference Value (NRV), so it cannot be categorized as a "protein source". The dietary fiber level is below 0.1 g per 100g, and according to Food Regulation 1985, the total fat content is below 0.10 g per 100g, thereby meeting the criteria for being labelled as "zero fat." The carbohydrate level is 12.6 g per 100 g, making it acceptable for people following a low-carbohydrate diet. The beverages cannot be accurately classified as "free energy" or "low energy" drinks due to their energy level of 50 kcal per 100g. The sugar concentration is 10.2 g per ml, consisting of four distinct types of sugars. The sodium concentration is 4.95 mg, classified as "free sodium" based on the Nutrient Reference Value (NRV). The nutrient content of sample 12 seaweed drinks is stated to be free of fat and sodium [18].

Table 5 Nutrient Composition of Seaweed Drinks Sample 12

Nutrient Composition	Unit	Value
Protein	g/100g	<0.10
Dietary fiber	g/100g	<0.10
Total fat	g/100g	<0.10
Total carbohydrate	g/100g	12.60
Energy	kcal/100g	50.00
Total sugar	g/100g	10.30
Sodium	mg/100g	4.95

4. Conclusion

Seaweed drinks with various sugar samples were created and analysed for sensory attributes, physicochemical properties, and nutrient compositions. The sensory results showed that 13 formulations of seaweed drinks were accepted by the panellists, with seaweed drink sample 12 having the highest scores for aroma, taste, aftertaste, and overall acceptance. The pH stability in seaweed beverages was maintained because of standardization across all samples, ensuring consistent physicochemical attributes. However, the brix value did not show a consistent trend due to differences in the sugar composition among the samples. Therefore, it can be concluded that the formulated seaweed drinks with various sugars were accepted by consumers.

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Conflict of interest

Authors declare there is no conflict of interests regarding the paper's publication.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Fildzah Nasuha Hamid, Faridah Kormin; **data collection:** Faridah Kormin; **analysis and interpretation of results:** Fildzah Nasuha Hamid, Faridah Kormin; **draft manuscript preparation:** Fildzah Nasuha Hamid, Faridah Kormin. All authors reviewed the results and approved the last version of the manuscript.

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