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FULL PAPER

Evaluation of stability and quality characteristics of moringa (*Moringa oleifera*) herbal tea during storage

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Abstract

Determining the product's shelf life was necessary to ensure its quality, effectiveness, and safety. This study aimed to determine the stability of moringa tea products. The real-time stability test was carried out at room temperature (28.5–33.5°C) with 50–75% relative humidity, and the sampling interval was once every third month (Month-0, Month-3 and Month-6). Physical parameters (organoleptic properties and moisture content), chemical parameters (total phenolic content and total flavonoid content), and microbial parameters (total plate count and total yeast and mould count) were measured using the standard procedures. The organoleptic test showed no changes in colour, taste, smell, and shape of the teabag and brewed tea products up to the sixth month of evaluation. However, there were significant changes in the moisture content (MC), total phenolic content (TPhC), and total plate count (TPC) of the teabag and only in the TPhC of the brewed tea product throughout the quality control. Physical, chemical, and microbial parameters still met the quality requirements set by the Pharmacopoeia Herbal Indonesia and the Indonesian Food and Drug Authority. The qualities of moringa tea bags and brewed moringa teas stored at room temperature (28.5–33.5°C) and 50–75% relative humidity showed good physicochemical properties and stability in the test during six months of observation.

1. Introduction

Moringa oleifera is a nutrient-rich plant of the Moringaceae family that contains important phytochemical compounds in its leaves, pods, and seeds. Research shows that moringa has vitamin C seven times higher than oranges, vitamin A ten times higher than carrots, calcium 17 times higher than milk, protein nine times higher than yoghurt, potassium 15 times higher than bananas, and iron 25 times higher than spinach. Moringa's phytochemicals include tannins, sterols, saponins, phenolics, alkaloids, flavonoids (quercetin, isoquercetin, kaemferol, isothiocyanates), and glycosides (Gopalakrishnan *et al*., 2016; Vergara-Jimenez *et al*., 2017). Flavonoids and isothiocyanates are responsible for the plant's benefits and bioactivities (Kou *et al*., 2018). Flavonoids play a role in the antidiabetic and antioxidant activities of moringa, and flavonoids such as quercetin reportedly have antiproliferative and anticancer properties. In addition, moringa is a nutraceutical that pharmacologically serves as an anti-inflammatory, hepatoprotective, neuroprotective, antidiabetic, and antihyperlipidemic agent. *Moringa oleifera* is an excellent source of macro and micronutrients rich in antioxidant compounds (Sahay *et al*., 2017). Because of the high nutritional values and pharmacological benefits, it has the potential to be developed into functional food (Saini *et al*., 2016) like herbal tea. According to Sugahara (2018), moringa can be processed into herbal teas that contain abundant antioxidants to prevent free radical-induced interferences in the body (Sugahara *et al*., 2018).

Herbal teas are tea made with plant materials other than *Camellia sinensis* leaves. These beverages are made from the simple extraction (e.g., infusion or decoction) of dried leaves, flowers, fruits, or herbs in boiled or heated water (brewing) for a few minutes (Kamiloglu *et al*., 2016). Herbal teas are widely consumed because of their health-promoting potential and sensory

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characteristics (Kinki, 2021) and are thus increasingly popular, especially in developing countries. *Moringa oleifera* has green leaves containing antioxidants, polyphenols, and other phytochemical compounds (Okafor and Ogbobe, 2015; Lalas *et al.*, 2017). Fresh moringa leaves are processed into herbal teas to make them readily used and facilitate storage and preservation, allowing longer shelf life than fresh leaves.

There are many types of moringa herbal tea on the market, including tea bags and brewed teas. “KELORITA” is a moringa tea product by Sri Rejeki Women Farmer Group in Bogo Village (Bojonegoro, Indonesia) that has received a Home Industry Product certificate from the local health office. It is marketed on a limited scale to the surrounding community but without an expiration date written on the product. Determining the product’s shelf life is necessary to ensure its quality, effectiveness, and safety. For this purpose, a traditional product stability test is performed to calculate the shelf life of the final product that has been packaged and stored in appropriate conditions and retains its physical, microbiological, and chemical specifications (Association of South East Asian Nations, 2013).

The most crucial aspect of a product stability study is storage condition. Storage temperature and humidity determine the shelf life of the product. Four climatic zones have been determined for the determination of conditions in the herbal product stability test. These test conditions may vary from country to country. Indonesia itself is included in climatic zone IV, namely countries with a tropical climate. Other countries included in climatic zone IV include Brazil, Ghana, Nicaragua, Nigeria, and the Philippines (Kumadoh and Ofori-Kwakye, 2017).

The purpose of stability testing is to obtain proof of variation in the quality of the herbal products over a specified time under the influence of environmental factors (e.g., temperature, light exposure, oxygen level, and moisture) and dosage form characteristics (i.e., other ingredients or excipients, particle size, microbial contamination, trace metal contamination, and leaching from the container) and to propose recommended storage conditions and shelf life (Höhne *et al.*, 2011). Annex V of the ASEAN Guidelines on Stability Study and Shelf-Life of Traditional Medicines describes that the stability test parameters for traditional preparations like herbal tea bags/brewed teas include organoleptic properties, the concentrations of certain active compounds, moisture contents, and microbial contamination (Association of South East Asian Nations, 2013). The stability test itself can be carried out in real-time or accelerated according to the conditions and sampling frequency specified in the guidelines. This research aimed to evaluate the stability of "KELORITA" moringa tea bags and brewed teas.

2. Materials and methods

2.1 Materials

The research materials were Peptone Dilution Fluid (PDF) (Merck, Indonesia), Plate Count Agar (Merck, Indonesia), Sabouraud Dextrose Agar (Merck, Indonesia), ethanol p.a. (Merck, Indonesia), methanol p.a. (Merck, Indonesia), 10% aluminium chloride solution (Merck, Indonesia), aquadem (Faculty of Pharmacy, University of Surabaya, Indonesia), Folin-Ciocalteu reagent (Merck, Indonesia), 1 M sodium acetate solution (Merck, Indonesia), 1% sodium hydroxide solution (Merck, Indonesia), gallic acid (Sigma-Aldrich, Singapore), and quercetin (Sigma-Aldrich, Singapore).

2.2 Equipment

The research tools included Mettler Toledo moisture analyzer, Scout pro digital scale, Ohaus analytical balance, thermo hygrometer, Laminar Air Flow (LAF) SPEG AIR TECH VF-100-B, spirit lamp, All American autoclave sterilizer, BD-115 incubator binder, Shimadzu UV-Vis spectrophotometer, Socorex micropipettes, IKA magnetic stirrer with a heating plate, and laboratory glassware (beaker, test tube, Erlenmeyer flask, measuring cup, volume pipette, measuring pipette, drop pipette, glass funnel, Petri dish, stirring rod, vial, and lid).

2.3 Research sample

The moringa tea products tested were “KELORITA” tea bags and brewed teas produced by Sri Rejeki Women Farmers Group in Bogo Village, Kapas District, Bojonegoro Regency, Indonesia. One cardboard box contained 25 tea bags, each weighing 2 g, while the brewed tea was packaged in a 100 g pouch. The testing was conducted in real-time with a sampling interval of three months (Month-0, Month-3 and Month-6). The products were stored at room temperature of 28.5–33.5° C with 50–75% relative humidity.

2.4 Organoleptic test

The organoleptic test involves the senses of sight, smell, taste, and touch to observe the macroscopic appearance, texture, colour, smell, and taste of a crude sample (Ulhas, 2015). In this stage, the organoleptic properties of the moringa powdered crude sample (tea bag) and chopped crude sample (brewed tea) were examined and compared with the 2017 Indonesian Herbal Pharmacopoeia II monograph (Ministry of Health of the Republic of Indonesia, 2017). In addition, this stage compared the sample’s organoleptic properties in

Months 3 and 6 with the initial appearance of the product (Month 0).

2.5 Total phenolic content

The total phenolic content (TPhC) analysis refers to the 2017 Indonesian Herbal Pharmacopeia II monograph (Ministry of Health of the Republic of Indonesia, 2017).

2.5.1 Test solution for the crude sample

Approximately 1 g of the crude sample—i.e., powdered (moringa tea bags) or chopped (moringa brewed tea) was weighed and placed in an Erlenmeyer flask, added with 25 mL of methanol p.a., then extracted for 1 hr with a magnetic stirrer. Afterwards, through a filter paper, the extract was poured into a 25-mL volumetric flask and added with methanol p.a. up to the marking.

2.5.2 Test procedure

Gallic acid as the calibration standard was prepared in a series of dilutions, i.e., 100, 70, 50, 30, 15, and 5 µg/mL. Each diluted calibration standard was placed in a suitable container and mixed with 1 mL of the test solution and 5.0 mL of the reagent Folin-Ciocalteu dilute (7.5% in water). This mixture was allowed to stand for 8 mins, added with 4.0 mL of 1% NaOH, and then incubated for 1 hr. For each series, the absorbance of the mixture was read at a maximum absorption wavelength of approximately 730 nm. The blank measurement was prepared and conducted in the same way, without adding the test solution. Afterwards, a calibration curve was created, and the total phenolic content of the test solution was calculated and expressed as mg/100 g GAE (gallic acid equivalent).

2.6 Total flavonoid content

The total flavonoid content (TFC) analysis refers to the 2017 Indonesian Herbal Pharmacopeia II monograph (Ministry of Health of the Republic of Indonesia, 2017).

2.6.1 Test solution for the crude sample

Approximately 1 g of the powdered crude sample was weighed and placed in an Erlenmeyer flask, added with 25 mL of ethanol p.a. and extracted for 1 hr with a magnetic stirrer. The extract was poured into a 25-mL volumetric flask through a filter paper, and then the filter paper was rinsed with 70% ethanol. The mixed solution was added with 70% ethanol up to the marking.

2.6.2 Test procedure

Quercetin as the calibration standard was prepared in a serial dilution, i.e., 100, 75, 50, and 25 µg/mL. A total of 0.5 mL of the test solution and each quercetin solution were pipetted separately into a suitable container. Then, each container was added with 1.5 mL of ethanol p.a., 0.1 mL of 10% aluminium chloride, 0.1 mL of 1 M sodium acetate, and 2.8 mL of water shaken gently, and allowed to stand for 30 mins at room temperature. The absorbance of this mixture was measured at the maximum absorption wavelength. The blank measurement was prepared and conducted in the same way, without adding aluminium chloride. Afterwards, a calibration curve was created, and the total flavonoid content of the test solution was calculated and expressed as mg/100 g QE (quercetin equivalent).

2.7 Total plate count

The total plate count (TPC) test procedure follows Agyeman-Duah (2017). First, 1 g of the sample was weighed and dissolved in 9 mL of sterile Peptone Dilution Fluid (PDF) in a test tube to obtain 10^{-1} dilution. Then, 1 mL was pipetted into the first test tube containing 9 mL of sterile PDF diluent to obtain a 10^{-2} dilution then shaken homogeneously. This dilution technique aimed to obtain 10^{-3}, 10^{-4}, and 10^{-5} dilution levels. Afterwards, 0.1 mL of each diluted solution was pipetted into a Petri dish and duplicated for each serial dilution. Furthermore, 15–20 mL of Plate Count Agar (PCA) was liquefied at 45±1°C and poured into each Petri dish. Immediately, the Petri dish was shaken gently, allowing the sample to mix with the culture media evenly. After the media was solidified, the Petri dish was incubated at 35°C for 24 hrs in an inverted position (Agyeman-Duah *et al.*, 2017). The TPC is expressed as Colony Forming Unit per gram (CFU/g).

2.8 Total yeast and mould count

The total yeast and mould count (TYMC) test procedure follows Agyeman-Duah (2017). In this test, the volume of the sample solution pipetted into a Petri dish containing Sabouraud Dextrose Agar (SDA) for each serial dilution was 0.1 mL. This procedure was duplicated for each serial dilution. Then, 15–20 mL of the SDA was liquefied at 45±1°C and poured into each Petri dish. Immediately, the Petri dish was shaken gently to ensure the sample was evenly mixed with the culture media, incubated at 25°C, and observed on the third day (Agyeman-Duah *et al.*, 2017). An examination was performed during the duplicate testing (including the blank media). The TYMC is expressed as Colony Forming Unit per gram (CFU/g).

2.9 Statistic analysis

Each test result (% MC, TPhC, TFC, TPC, TYMC) was analyzed using a non-parametric test (Mann Whitney) on the Statistic Packaging for Social Sciences (SPSS) program. The level of significance used was

0.05% to identify differences between samples.

3. Results and discussion

The crude samples were green to brownish-green, odourless, tasteless moringa leaflets (Ministry of Health of the Republic of Indonesia, 2017). Observations in Month-0 (Day 0), Month-3, and Month-6 showed that the tea bag and brewed tea samples organoleptically met the standards issued by the Indonesian Herbal Pharmacopoeia and that there was no physical change in the colour, shape, smell, and taste during storage. The organoleptic test results are presented in Figure 1 and Table 1. The moisture content (% MC) of the product is related to the effectiveness of the drying process of herbal tea. Drying is a critical parameter in maintaining product quality throughout its shelf life because, if conducted incorrectly, several enzymes can be reactivated and cause the decomposition of active compounds in plant ingredients, increasing the risk of microbial growth (bacteria and fungi) (Builders *et al.* 2020). A proper drying process is at a temperature of approximately 55°C (Castillo *et al.*, 2020). In the Indonesian Herbal Pharmacopoeia, crude drug drying is carried out at no more than 60°C and until the moisture content reaches <10% (Ministry of Health of the Republic of Indonesia, 2017). At the same time, it should not be excessive because drying at high temperatures (>130°C) can damage the crude drug's antioxidant compounds (Razak *et al.*, 2018).

Table 2 shows that the moisture contents (%MC) of the teabag and brewed tea products in Months 0, 3, and 6 were 6.48±0.0029%, 7.09±0.0007%, 7.23±0.0005% and 8.44±0.0017%, 8.52±0.0010%, 8.60±0.0007%, respectively. The statistical test results indicate that the moisture contents of the tea bags vary significantly during six-month storage (P = 0.027), while those of the brewed teas vary insignificantly (P = 0.148). Herbal products of Moringa teabag and brewed tea showed an increase in %MC. Storage temperature increases over time and is followed by an increase in the %MC of the product (Razak *et al.*, 2018; Kim *et al.*, 2019). The herbal product absorbs moisture from the surrounding environment; temperature and relative humidity are the two most influencing factors. The degree of fines of herbal tea powder during storage also affects its stability. Herbal tea powders stored in airtight containers can last up to a year, while teas stored in tea bags can last longer. Crude drug and extract of *Nauclea latifolia* were stored at room temperature in a glass container and the tropical climate (Nigeria) was stable for more than one year (Ameh *et al.*, 2010).

Table 2. Moisture contents of the moringa herbal tea samples

Observation time (month)	Moisture Content (%)	
	Tea bags	Brewed tea
0	6.48±0.0029[a]	8.44±0.0017[d]
3	7.09±0.0007[b]	8.52±0.0010[d]
6	7.23±0.0005[c]	8.60±0.0007[d]

Values are presented as mean±SD (n = 3). Values with different superscript are significantly different (p>0.05).

Moringa tea bags are commonly packaged in semi-permeable cardboard boxes, allowing moisture transfer through the container's surface. The plastic pouch used for packaging moringa brewed teas is watertight, and this will also affect storage temperature and humidity (Indonesian Food and Drug Authority, 2009). In this study, the products were stored at room temperature (28.5–33.5°C) with 50–75% humidity (adequately high). Recommended storage conditions are 30±2°C and 75±5% relative humidity (Association of South East Asian Nation, 2013). However, the increase in the %MC

Figure 1. Visual, physical characteristics of the tea bag (a-c) and brewed tea samples (d-f) at different observation times: (a) and (d) Month 0 (Day 0), (b) and (e) Month 3, (c) and (f) Month 6.

Table 1. Organoleptic test results of the moringa herbal tea samples

Observation time (month)	Sample	Colour	Odour	Shape	Taste
0	Tea bags	Green	Odourless	Fine powder	Tasteless
	Brewed teas	Brownish-green	Odourless	Chopped crude leaves (coarse-sized)	Tasteless
3	Tea bags	Green	Odourless	Fine powder	Tasteless
	Brewed teas	Brownish-green	Odourless	Chopped crude leaves (coarse-sized)	Tasteless
6	Tea bags	Green	Odourless	Fine powder	Tasteless
	Brewed teas	Brownish-green	Odourless	Chopped crude leaves (coarse-sized)	Tasteless

Table 3. Total phenolic contents and total flavonoid contents of the moringa herbal tea samples

Observation time (month)	Total Phenolic Content (mg/100 g GAE)		Total Flavonoid Content (mg/100 g QE)	
	Moringa tea bags	Brewed Moringa tea	Moringa tea bags	Brewed Moringa tea
0	12.04±0.07^{a}	14.20±0.00^{d}	7.86±0.79^{g}	5.39 ±0.10^{h}
3	11.87±0.13^{b}	14.06±0.05^{e}	7.17±0.15^{g}	5.25±0.04^{h}
6	11.40±0.40^{c}	13.87± 0.05^{f}	7.06±0.14^{g}	5.19±0.06^{h}

Values are presented as mean±SD (n = 3). Values with different superscript are significantly different (p>0.05).

of the products is still below the requirement, which is <10%.

TPhC and TFC tests aim to ensure that the active compounds acting as antioxidants remain stable during storage (Association of South East Asian Nation, 2013). Table 3 shows the test results. The total phenolic contents of moringa tea bags after 0, 3 and 6 months of storage were 12.04±0.07, 11.87±0.13, and 11.40±0.40 mg/100 g GAE, while those of the brewed teas were 14.20±0.00, 14.06±0.05, and 13.87±0.05 mg/100 g GAE, respectively. The statistical test results indicate that the TPhC of both products varies significantly (P = 0.039 and P = 0.023) after 0, 3, and 6 months of storage. Scholars have found that the TPhC of herbal teas positively correlates with antioxidant effectiveness, which is expressed in Trolox Equivalent Antioxidant Capacity (TEAC) (Vyas *et al*., 2015; Yanakieva *et al*., 2015; Fotakis *et al*., 2016). The antioxidant capacity refers to the roles of phenolic compounds as reducing agents, hydrogen donators, and singlet oxygen quenchers (Srivastava *et al*., 2012; Yamin *et al*., 2021). The total flavonoid contents of the tea bags and brewed teas in Months 0, 3, and 6 were 7.86±0.79, 7.17±0.15, 7.06±0.14 mg/100 g QE, and 5.39±0.10, 5.25±0.04, 5.19±0.06 mg/100 g, respectively. The statistical test results indicate no significant difference (P = 0.063 and P = 0.061) during 0, 3, and 6 months of storage. Previous research by Jayani *et al*. (2020) shows that the total flavonoid content of powdered moringa tea produced in Bogo Village is 13.08±0.08 mg/100 mg QE. The strong antioxidant properties of *M. oleifera* are attributed to its high phenolic and flavonoid contents, which are the main compounds responsible for antioxidant activities (Sulastri *et al*., 2018). The tests also showed that TPhC and TFC tests of the tea bags and brewed teas decreased during storage. These results correspond to a previous stability study of *Bacopa monnieri* that found that the marker compounds (bacopaside I and bacoside A) significantly decrease during storage and that the plant ingredients are only stable for three months under appropriate storage conditions (Srivastava *et al*., 2012).

European Medicines Agency (EMA) (2011) requires that if the level of active herbal compounds associated with their therapeutic activity is known, any variation in this level during storage should not exceed ±5%, and if it is unknown, the range of variation should not exceed ±10% of the initial value (Tournas and Katsoudas, 2008). The level of marker compounds, such as essential oil in herbal tea preparation, generally decreases by more than 20% of the initial level. In this case, the stability can be assessed by looking at the standard marker value required by the Herbal Pharmacopoeia in the country. Indonesian Herbal Pharmacopoeia requires that the flavonoid content of crude drugs from moringa leaves is not lower than 0.5% and is calculated as quercetin equivalent (Ministry of Health of the Republic of Indonesia, 2017). The results indicate that the TFC of the tea bags and brewed tea is stable for six-month storage, which meets the requirement set in the Indonesian Herbal Pharmacopoeia.

In the country, herbal tea consumption shows an increasing trend because of the product's effectiveness for health. In addition to being effective, herbal tea products must be safe for consumption and free from pathogenic microbes. Pathogenic microbial contamination in herbal tea preparations has been widely reported, including *Aspergillus niger*, *A. flavus*, *Penicillium* spp., *Eurotium rubrum*, *E. chevalieri*, *Fusarium* spp., *Alternaria alternata*, and yeasts in several herbal tea samples on the market (Tournas and Katsoudas, 2008). Apart from fungi, many cases of aerobic bacterial contamination have also been reported, although it does exceed the predefined limit. A cross-sectional study was carried out in the city of Macapa, Brazil. A total of 31.8% of the herbal medicine samples exceeded the safety limits for Bacterial growth (Acceptable limits of bacteria ≤ 10^5 colonies/g). It was also found that 31.0% of the samples exceeded the safety limit for fungal growth. The microorganisms most isolated from the herbal medicines were *S. aureus* (49.2%), *Salmonella* spp. (34.8%), *E. coli* (25.8%), and *P. aeruginosa* (14.4%) (Sousa Lima *et al*., 2020). Table 4 and Figures 2–5 show the results of the microbiological testing for total plate count (TPC) and total yeast and mold count (TYMC).

The results showed that the total plate counts of the tea bags and brewed teas after 0, 3, and 6 months of storage were 2.1–3.1×10^3, 3.0–4.8×10^3, 8.3–19×10^3 CFU/g and 4.95–22.80×10^2, 5.55–38.50×10^2, 7.25–66.20×10^2 CFU/g, respectively. The statistical test results indicate significant differences in the total plate counts of the moringa tea bags (P = 0.039) and

Table 4. Total plate count and total yeast and mould count of Moringa herbal tea

Observation time (month)	Total Plate Count (CFU/g)		Total Yeast and Mold Count (CFU/g)	
	Moringa tea bag	Brewed Moringa tea	Moringa tea bag	Brewed Moringa tea
0	$2.1\text{-}3.1\times10^{3a}$	$4.95\text{-}22.80\times10^{2d}$	$3.1\text{-}4.1\times10^{3e}$	$<100^{f}$
3	$3.0\text{-}4.8\times10^{3b}$	$5.55\text{-}38.50\times10^{2d}$	$3.6\text{-}4.6\times10^{3e}$	$<100\text{-}2.3\times10^{2f}$
6	$8.3\text{-}19\times10^{3c}$	$7.25\text{-}66.20\times10^{2d}$	$4.1\text{-}5.9\times10^{3e}$	$1.85\text{-}3.80\times10^{2f}$

Values with different superscript are significantly different (p>0.05).

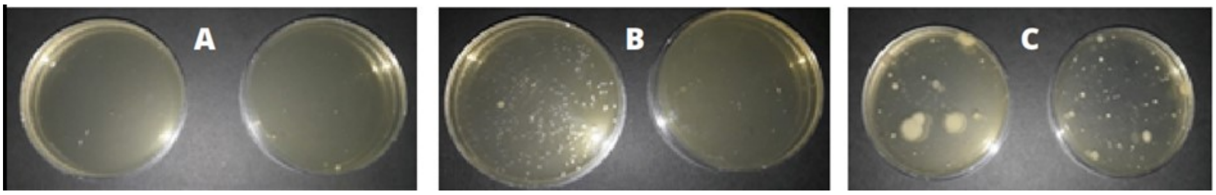

Figure 2. Microbial growth in plate count agar containing ten-fold diluted moringa tea bag samples collected after (A) 0 month (B) 3 months and (C) 6 months of storage.

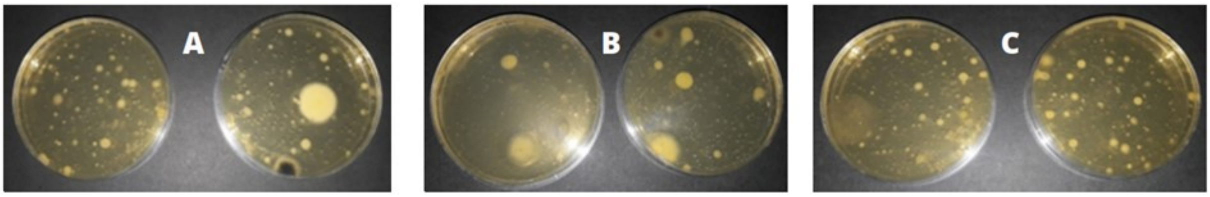

Figure 3. Microbial growth in Sabouraud dextrose agar containing ten-fold diluted moringa tea bag samples collected after (A) 0 month (B) 3 months and (C) 6 months of storage.

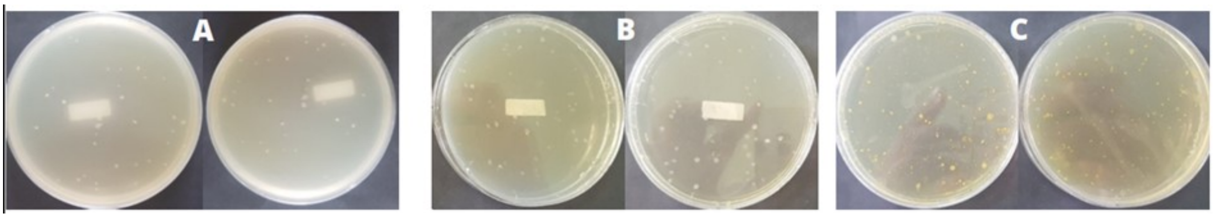

Figure 4. Microbial growth on plate count agar containing ten-fold diluted brewed moringa tea samples collected after (A) 0 month (B) 3 months and (C) 6 months of storage.

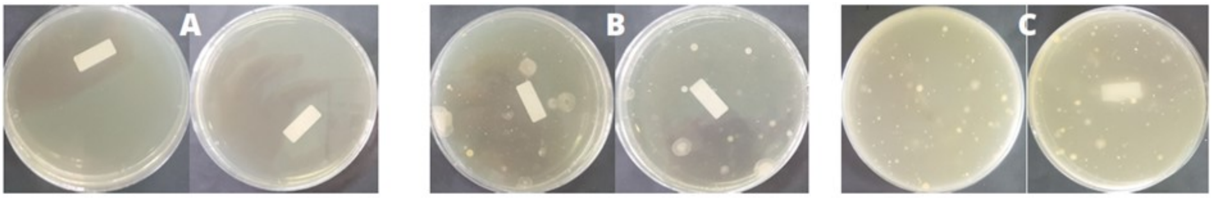

Figure 5. Microbial growth in Sabouraud dextrose agar containing ten-fold diluted brewed moringa tea samples collected after (A) 0 month (B) 3 months and (C) 6 months of storage.

insignificant TPC differences for the brewed teas during storage (P = 0.393). Meanwhile, the total yeast and mould count of the tea bags and brewed teas in Months 0, 3, and 6 were $3.1–4.1\times10^3$, $3.6–4.6\times10^3$, $4.1–5.9\times10^3$ CFU/g and <100, $<100–2.3\times10^2$, $1.85–3.80\times10^2$ CFU/g, respectively. The statistical test results indicate that the total yeast and moulds count of both products do not vary significantly (P = 0.191 and P = 0.073) during six-month storage. The Indonesian Food and Drug Authority has set the acceptable bacterial of $\leq5\times10^7$ and fungal contamination of $\leq5\times10^5$ colonies/g (Indonesian Food and Drug Authority, 2019). Limit for microbial contaminant based on World Health Organization standard for herbal medicines to which boiling water is added before use: aerobic bacteria $\leq10^7$ colonies/g, yeasts, and moulds $\leq10^4$ colonies/g, Escherichia coli ≤10 colonies/g, other enterobacteria $\leq10^3$ colonies/g, clostridia, salmonellae, and shigella must be absence (World Health Organization, 2007). Based on the test results, both TPC and TYMC of the moringa tea bags and brewed moringa teas fulfil the requirements for six-month storage. Another study about herbal tea stability was conducted in Nigeria. A stability test has been carried out on three poly-herbal tea variants containing *Hibiscus sabdariffa*, *Moringa oleifera*, Citrus limon, and *Zingiber officinale*. The herbal ingredients were brewed using 250 mL of hot water (100°C), then allowed to cool to room temperature (27°C) and stored in the refrigerator (5°C). Overall, herbal teas showed good physicochemical properties and stability in the test during one week of observation (Builders *et al*., 2020).

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4. Conclusion

The qualities of moringa tea bags and brewed moringa teas stored at room temperature (28.5–33.5°C) and 50–75% relative humidity showed good physicochemical properties and stability in the test during six months of observation.

Conflict of interest

The authors declare no conflict of interest.

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Review

Full Papers

Consumer’s purchase intention and consumption of convenience food: The role of socio-demographic and economic determinants

Imtiyaz, H., Soni, P. and Yukongdi, V.

Available Online: 10 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).391

Imtiyaz *et al.* studied on consumer's purchase intention and consumption of convenience food.

Optimizing extraction of functional compounds from Indonesian black rice using response surface methodology

Nurhidajah., Rosidi, A., Yonata, D. and Pranata, B.

Available Online: 10 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).732

The optimization extraction of functional compounds from Indonesian black rice using response surface methodology was studied by Nurhidajah *et al.*

Extraction and characterization of fish protein concentrate from Tilapia (*Oreochromis niloticus*)

Rieuwpassa, F.J., Karimela, E.J., Cahyono, E., Tomasoa, A.M., Ansar, N.M.S., Tanod, W.A., Nadia, L.M.H., Ramadhan, W., Ilhamdy, A.F. and Rieuwpassa, F.

Available Online: 10 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).528

Rieuwpassa *et al.* evaluated on the extraction and characterization of fish protein concentrate from Tilapia (*Oreochromis niloticus*).

Prospects of lactoferrin as potential natural antibiotic

Mimmi, S.F.H., Areefin, P., Nasreen, W. and Haque, M.A.

Available Online: 10 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).522

Mimmi *et al.* studied on the prospects of lactoferrin as potential natural antibiotic.

Total phenolic compound and its antioxidant activity of by-product from pineapple

Lasunon, P., Phonkerd, N., Tettawong, P. and Sengkhamparn, N.

Available Online: 14 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).453

Lasunon *et al.* studied on the total phenolic compound and its antioxidant activity of by-product from pineapple.

Analysis of lard, chicken fat and beef fat in ternary mixture using FTIR spectroscopy and multivariate calibration for halal authentication

Lestari, L.A., Rohman, A., Prihandiwati, E., Aini, A.R., Irnawati, and Khasanah, F.

Available Online: 14 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).488

The analysis of lard, chicken fat and beef fat in ternary mixture using FTIR spectroscopy and multivariate calibration for halal authentication was performed by Lestari *et al.*

Formulation and stability of *Ulva lactuca* fatty acid oil in water (O/W) microemulsion

Ningrum, Y.P. and Budhiyanti, S.A.

Available Online: 14 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).575

Ningrum *et al*. formulated and studied the stablity of *Ulva lactuca* fatty acid oil in water (O/W) microemulsion.

Identification of cyclic fatty acids in frying oil by NMR

Shaker, M.A., Marwa, A.A, Aml, R.T. and Ahmed, A.E.

Available Online: 14 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).577

Shaker *et al*. identified cyclic fatty acids in frying oil using NMR.

Macronutrients and micronutrients in germinated and non-germinated seed flour and moringa leaves (*Moringa oleifera* L.)

Calizaya-Milla, Y.E., Saintila, J., García-García, J.P., Dávila Villavicencio, R., Vásquez-Vásquez, J.E., Pacheco-Espinoza, J.I., Sotelo-Méndez, A. and Pampa-Quispe, N.B.

Available Online: 19 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).448

The macronutrients and micronutrients in germinated and non-germinated seed four and moringa leaves (*Moringa oleifera* L.) were studied by Calizaya-Milla *et al.*

The effectiveness of using chitosan as a natural antibacterial for maintaining the sausage quality

Gita, R.S.D., Waluyo, J., Dafik and Indrawati

Available Online: 19 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).007

Gita *et al.* evaluated the effectiveness of using chitosan as a natural antibacterial in maintaining the quality of the sausage.

Microencapsulation of corn mint (*Mentha arvensis* L.) essential oil using spray-drying technology

Truong, C.B.H, Nguyen, T.K.H, Tran, T.T.T, Nguyen, T.N.L and Mai, H.C.

Available Online: 19 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).622

The microencapsulation of corn mint (*Mentha arvensis* L.) essential oil using spray-drying technology was performed and studied by Truong *et al.*

The combined effect of lactic acid and natural plant extracts from guava leaves and pomegranate peel on the shelf life of fresh-cut apple slices during cold storage

Seddiek, A.S., Hamad, G.M., Zeitoun, A.A., Zeitoun, M.A.M. and Ali, S.

Available Online: 19 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).397

Seddiek *et al.* evaluated the combined effect of lactic acid and natural plant extracts from guava leaves and pomegranate peel on the shelf-life of fresh-cut apple slices during cold storage.

Chemical, microbiological and sensory characteristics of 'Tsalafouti' traditional Greek dairy product

Pappa, E.C., Kondyli, E., Malamou, E., Kakouri, A., Vlachou, A.-M. and Samelis, J.

Available Online: 22 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).690

The chemical, microbiological and sensory characteristics of 'Tsalafouti' traditional Greek dairy product were evaluated by Pappa *et al.*

Drying kinetics and quality aspects of bitter gourd (*Momordica charantia*) dried in a novel cabinet dryer

Yasmin, S., Hasan, M., Sohany, M. and Sarker, M.S.H.

Available Online: 22 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).437

Yasmin *et al.* studied on the drying kinetics and quality aspects of bitter guard (*Momordica charantia*) dried in a novel cabinet dryer.

The effect of dual modification with annealing and Heat Moisture Treatment (HMT) on physicochemical properties of jack bean starch (*Canavalia ensiformis*)

Ariyantoro, A.R., Fitriyani, A., Affandi, D.R., Muhammad, D.R.A., Yulviatun, A. and Nishizu, T.

Available Online: 22 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).497

Ariyantoro *et al.* evaluated the effect of dual modification with annealing and Heat Moisture Treatment (HMT) on physicochemical properties of jack bean starch (*Canavalia ensiformis*)

In vitro antioxidant and anticholinesterase activities of ethanolic turmeric crude extract

Abbas, S., Latif, S.M., Muhamad, I.I., Hesan, M.A. and Kormin, F.

Available Online: 22 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).101

Abbas *et al*. evaluated the in vitro antioxidant and anticholinesterase activities of ethanolic turmeric crude extract.

Total polyphenol and flavonoid contents and antioxidant activities of water lettuce (*Pistia stratiotes*) leave extracts

Sudirman, S., Herpandi, Safitri, E., Apriani, E.F. and Taqwa, F.H.

Available Online: 26 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).484

The total polyphenol and flavonoid contents and antioxidants activities of water lettuce (*Pistia stratiotes*) leave extracts were studied by Sudirman *et al.*

Quantitative analysis and discrimination of lard in chicken fat using FTIR spectroscopy and chemometrics for halal authentication

Irnawati, Putri, R.N., Lestari, L.A. and Rohman, A.

Available Online: 26 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).459

Irnawati *et al.* studied on the quantitative analysis and discrimination of lard in chicken fat using FTIR spectroscopy and chemometrics for halal authentication.

The effect of white sweet potatoes (*Ipomea batatas* L.) inulin extract addition on the characteristics of white bread with soybean flour substitution

Yudhistira, B., Saputri, K.E. and Prabawa, S.

Available Online: 26 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).360

Yudhistira *et al*. studied the effect of white sweet potatoes (*Ipomea batatas* L.) inulin extract addition on the characteristics of white bread with soybean flour substitution.

Biosorbtion, localization and bioavailability of zinc in *Spirulina platensis* culture

Jatupornpongchai, A., Phoopat, N., Limpirat, W. and Ningsanond, S.

Available Online: 26 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).471

The biosorbtion, localization and bioavailability of zinc in *Spirulina platensis* culture were studied by Jatupornpongchai *et al.*

Small scale cacao (*Theobroma cacao* L.) fermentation process utilizing cacao pod husk

Bobiles, S.C., Elegado, F.B., Millena, C.G. and Merca, F.E.

Available Online: 31 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).502

Bobiles *et al.* utilized cacao pod husk to ferment cacao (*Theobroma cacao* L.) in small scale.

Na-alginate elicitation as an alternative strategy to improve the antidiabetic potential of pigeon pea (*Cajanus cajan*) flour

Ariviani, S., Sasmita, L.C., Khusafa'ah, L.N., Ratnaningsih, N. and Yulviatun, A.

Available Online: 31 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).843

Ariviani *et al.* studied on the Na-alginate elicitation of pigeon pea (*Cajanus cajan*) flour to improve as an antidiabetic food

Degradation rate of astaxanthin from *Haematococcus pluvialis*

Dewati, P.R., Rochmadi, Rohman, A. and Budiman, A.

Available Online: 31 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).462

The degradation rate of astaxanthin from *Haematococcus pluvialis* was studied by Dewati *et al.*

Concentration of lycopene from watermelon juice using cross-flow filtration assisted with diafiltration

Nguyen, L.T., Nguyen, T.K.T. and Mai, H.C.

Available Online: 3 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).513

The concentration of lycopene from watermelon juice using cross-flow filtration assisted with diafiltration was studied by Nguyen *et al.*

Chemical properties and biological properties of four varieties of pomelo (*Citrus grandis* (L) Osbeck) in the Mekong Delta of Vietnam

Nguyen, N.H.K., Tran, M.T., Le, T.D., Tran, T.T. and Nguyen, M.

Available Online: 3 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).479

Nguyen *et al.* evaluated the chemical properties of four varieties of pomelo (*Citrus grandis* (L) Osbeck) in the Mekong Delta of Vietnam

Assessment of toxin-producing genes in *Aspergillus* species from traditional herbal products in Khon Kaen province, Thailand using molecular method

Jitjak, W.

Available Online: 3 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).551

Jitjak assessed the prevalence of toxin-producing genes in *Aspergillus* species from traditional herbal products in Khon Kaen province, Thailand using molecular method.

Antioxidant activity of *Piper cubeba* L. berries crude extracts and its fractions

Qiang, L.S., Rukayadi, Y., Padzil, K.N.M. and Razis, A.F.A.

Available Online: 3 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).611

Qiang *et al.* evaluated the antioxidant activity of *Piper cubeba* L. berries crude extracts and its fractions.

In vitro antioxidant activity of Cocoa (*Theobroma cacao* L) peel

Zubaydah, W.O.S., Sartinah, A., Nuralifah, Waelti, Sabarudin and Yamin

Available Online: 5 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).477

The in vitro antioxidant activity of Cocoa (*Theobroma cacao* L) peel was evaluated by Zubaydah *et al.*

Vitamin C, total titrated acid and antioxidant activity of Oximata® jelly mix

Banin, M.M., Nurdiana, S., Emmawati, A., Rohmah, M. and Rahmadi, A.

Available Online: 5 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).431

Banin *et al*. studied on the the vitamin C, total titrated acid and antioxidant activity of Oximata® jelly mix.

Microwave treatment to optimize physicochemical properties of modified Busil (*Xanthosoma sagittifolium*) starch

Hakim, L., Triwitono, P., Supriyanto and Marseno, D.W.

Available Online: 5 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).564

Hakim *et al.* optimized the physicochemical properties of microwave treated modified Busil (*Xanthosoma sagittifolium*) starch.

Physical characteristics, nutritional composition and phenolic compounds of some of the sorghum landraces obtained in South Africa

Nemukondeni, N., Mbajiorgu, C.A., Hassan, Z.M., Sebola, N.A., Manyelo, T.G., Bodede, O. and Mabelebele, M.

Available Online: 18 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).555

The physical characteristics, nutritional composition and phenolic compounds of some sorghrum landraces in South Africa were studied by Nemukondeni *et al.*

Antioxidant activity and α-amylase inhibitory of herbal drink from the combination of *Blumea balsamifera* L and *Coccinia grandis* L

Kusumawati, I.G.A.W., Atikawati., Putra, I.M.W. and Yogeswara, I.B.A.

Available Online: 18 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).524

Kusumawati *et al.* studied the antioxidant activity and α-amylase inhibitory of herbal drink from combination of *Blumea balsamifera* L and *Coccinia grandis* L

The use of FTIR spectroscopy combined with pattern recognition and multivariate calibration for rapid authentication of Etawa goat milk from soymilk

Windarsih, A., Rohman, A. and Irnawati

Available Online: 18 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).491

Windarsih *et al.* studied the use of FTIR spectroscopy combined with pattern recognition and multivariate calibration for rapid authentication of Etawa goat milk from soymilk.

Physicochemical properties of glucomannan isolated from fresh tubers of *Amorphophallus muelleri* Blume by a multilevel extraction method

Nurlela, N., Ariesta, N., Santosa, E. and Muhandri, T.

Available Online: 18 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).580

The physicochemical properties of glucomannan isolated from fresh tubers of *Amorphophallus muelleri* Blume by a multilevel extraction method was studied by Nurlela *et al.*

Gluten-free noodles made based on germinated organic red rice: chemical composition, bioactive compounds, antioxidant activity and sensory evaluation

Nugraheni, M., Windarwati and Palupi, Sri.

Available Online: 26 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).506

Nugraheni *et al*. studied on the chemical composition, bioactive compounds, antioxidant activity and sensory evaluation of the gluten-free noodles made from germinated organic red rice

Awareness and attitude towards 3D food printing technology: the case of consumer responses from Klang Valley, Malaysia

Ng, W.E., Pindi, W., Rovina, K. and Mantihal, S.

Available Online: 26 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).530

Ng *et al.* studied on the Klang Valley, Malaysia consumers' awareness and attitudes on their responses on 3D food printing technology.

Antioxidant and hypoglycemic effect of *Vasconcellea candicans* (A. Gray) A. DC. in albino mice: a native fruit of the Peruvian flora

Herrera-Calderon, O., Chávez, H., Iparraguirre-Meza, M., Cóndor-Privat, M.H., Galdos-Vadillo, B.L., Mendoza-Vilcahuaman, J. and Muñoz-de-la-Torre, R.J.

Available Online: 26 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).665

The antioxidant and hypoglycemic effect of *Vasconcellea candicans* (A. Gray) A. DC. In albino mice were evaluated by Herrera-Calderon *et al*.

In vitro antimicrobial appraisal of the potentials of _Morinda lucida_ against some selected bacteria.

Owolabi, A.O., Ndako, J.A., Akpor, O.B., Owa, S.O., Oluyori, A.P., Oludipe, O.E. and Aitolo, G.L.

Available Online: 26 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).424

Owolabi *et al.* evaluated the *in vitro* antimicrobial appraisal of *Morinda lucida* against some selected bacteria.

Profiling the chemical and sensory properties of cascara beverages from different locations in Indonesia

Riandani, A.P., Prangdimurti, E. and Herawati, D.

Available Online: 28 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).520

Riandani *et al*. compiled the chemical and sensory profile of cascara beverages from different locations in Indonesia.

Evaluation of stability and quality characteristics of moringa (_Moringa oleifera_) herbal tea during storage

Jayani, N.I.E., Hean, M.R., Krisnayanthi, N.L.A., Islamie, R., Rani, K.C. and Parfati, N.

Available Online: 28 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).568

Jayani *et al*. evaluated the stability and quality characteristics of *Moringa oleifera* herbal tea during storage.

Impact of demographic profile on nutritional labelling usage by working women population of Varanasi, India

Srivastav, S., Awasthi, M. and Saraswat, S.

Available Online: 28 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).729

Srivastav *et al*. performed a study to evaluate the nutritional labelling usage by working women population of Varanasi, India.

Microbiological assessment and detection of drug resistant bacterial isolates in some vended fresh fruit juice samples in Dhaka city, Bangladesh

Jabin, T., Hossain, M.M., Nasrin, S., Tabassum, R., Rahman, M.A. and Uddin, M.A.

Available Online: 28 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).517

Jabin *et al.* performed a microbiological assessment on vended fresh fruit juice samples in Dhaka city, Bangladesh and evaluated on the drug-resistance of the isolates.

Intra-Household food security among smallholder macadamia nuts and avocado farmers in Makhado and Thulamela municipalities, Limpopo Province, South Africa

Modika, M.P. and Oluwatayo, I.B.

Available Online: 31 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).337

The intra-household food security among smallholder macadamia nuts and avocado farmers in Makhado and Thulamela municipalities, Limpopo Province, South Africa was studied by Modika and Oluwatayo.

Effect of glycerol concentrations on the mechanical and physical properties of chicken skin gelatin-tapioca starch composite films

Lau, A.Y. and Sarbon, N.M.

Available Online: 31 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).546

Lau and Sarbon evaluated the effect of glycerol concentrations on the mechanical and physical properties of chicken skin gelatin-tapioca starch composite films.

Development of instant vegetarian cream soup from tempeh powder to increase antioxidant capacities

Lo, D., Huang, C.-S., Surya, R. and Steviany

Available Online: 31 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).635

Lo *et al*. developed instant vegetarian cream soup from tempeh powder to increase antioxidant capacities.

Mini Review

Review on ginger (*Zingiber officinale* Roscoe): phytochemical composition, biological activities and authentication analysis

Styawan, A.A., Susidarti, R.A., Purwanto, Windarsih, A., Rahmawati, N., Sholikhah, I.K.M. and Rohman, A.

Available Online: 31 JULY 2022 I https://doi.org/10.26656/fr.2017.6(4).500

Styawan *et al*. reviewed on Ginger (*Zingiber offinale* Roscoe): phytochemical composition, biological activities and authentication analysis.

Current authentication methods of herbs and herbal products: a systematic review

Pauzi, A.N., Muhammad, N., Abdullah, N. and Kamal, N.

Available Online: 5 AUGUST 2022 I https://doi.org/10.26656/fr.2017.6(4).468

Pauzi *et al*. review the current authentication methods of herbs and herbal products.

Food Research

COUNTRY

Malaysia

Universities and research institutions in Malaysia

Media Ranking in Malaysia

SUBJECT AREA AND CATEGORY

Agricultural and Biological Sciences
Food Science

PUBLISHER

Rynnye Lyan Resources

H-INDEX

20

PUBLICATION TYPE

Journals

ISSN

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2017-2023

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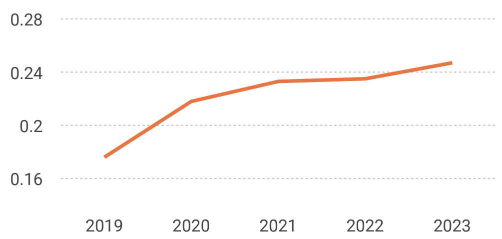

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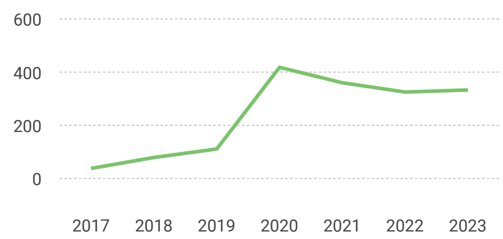

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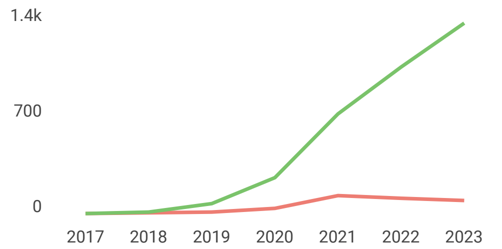

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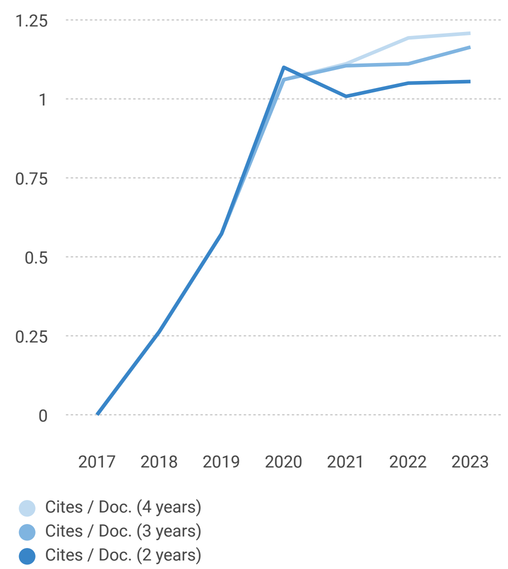

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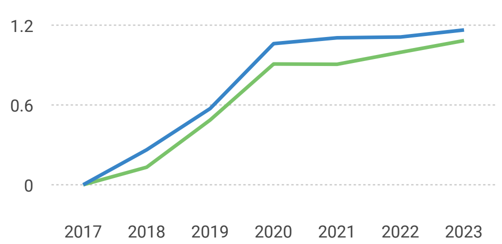

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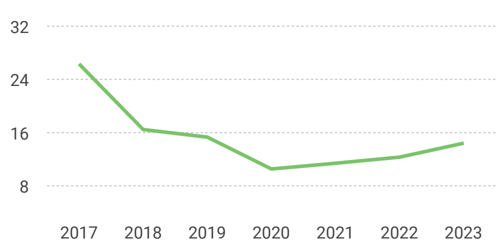

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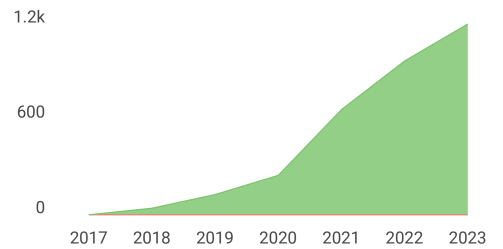

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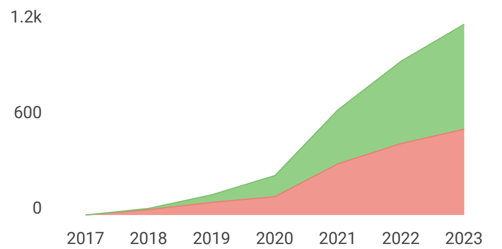

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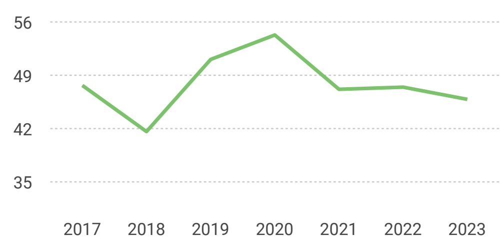

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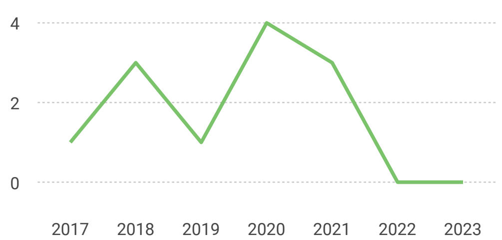

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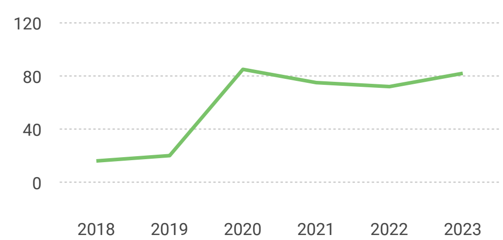

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Tai Ngo Van 2 years ago

Dear Mr/Mrs,
I am Ngo Van Tai, a researcher in Thailand. I would like to ask the current index status as SJR is a static image of Food Research journal (ISSN: 2550-2166).
Thanks for your support.
Best regards,

reply

SCImago Team

Melanie Ortiz 2 years ago

Dear Tai Ngo Van, thank you very much for your comment. We suggest you consult the Scopus database directly. Keep in mind that the SJR is a static image (the update is made one time per year) of a database (Scopus) which is changing every day.
The Scopus' update list can also be consulted here:
https://www.elsevier.com/solutions/scopus/how-scopus-works/content
Best Regards, SCImago Team

S **Syamsul Rahman** 3 years ago

Please enlighten me, if searching on Scopus Food Research it says 22% it means you are in Q4, but on the Food Research page it says Q3 with SJR 0.2

reply

SCImago Team

Melanie Ortiz 3 years ago

Dear Syamsul,
Thank you for contacting us.
As you probably already know, our data come from Scopus, they annually send us an update of the data. This update is sent to us around April / May every year.
The calculation of the indicators is performed with the copy of the Scopus database provided to us annually. However, the methodology used concerning the distribution of Quartiles by Scopus is different from the one used by SCImago.
For every journal, the annual value of the SJR is integrated into the distribution of SJR values of all the subject categories to which the journal belongs. There are more than 300 subject categories. The position of each journal is different in any category and depends on the performance of the category, in general, and the journal, in particular. The distribution by Quartiles cannot be considered over the journals' total amount within a Category. In the case of SCImago, the distribution has to be considered with the formula

Highest-SJR minus Lowest-SJR divided into four.
Best Regards,
SCImago Team

T **Tamiur Yazew** 3 years ago

Dear,

Thank you for your updated and quality journal.

I have submitted two manuscripts in the Food research journal. The editor of this journal sent me the acceptance letter for the two manuscripts. Howevver, they asked me to pay charge for the manuscripts. I am also working as a revierwer of this journla. I have edite two papers and sent it the editor. I am currently revewing a paper and it is ready to send back to the editor of this journal.

But I am from poor country, Ethiopia and I am unable to pay it. the condition in Ethiopia may also not allow me due to lack accessibility of this 150 USD.

So, please would you hel me by considering my issue into considerartion!

reply

SCImago Team

Melanie Ortiz 3 years ago

Dear Tamiur, thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you contact the journal's editorial staff so they could inform you more deeply. Best Regards, SCImago Team

K **Kamal** 3 years ago

Hi, Editorial Team members,
I would like to know the topic related to the "hygienic practices along the supply chain of fisheries" is considered or not to review of your Journal. Early response is highly appreciated

reply

SCImago Team

Melanie Ortiz 3 years ago

Dear Kamal,
thank you for contacting us.
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

Y **yani purbanang** 4 years ago

Hi,
This journal is written with Scopus index from 2017-2019, What is the index status in 2021 ??
Thank you for your explanation

reply

SCImago Team

Melanie Ortiz 4 years ago

Dear Yani,
Thank you very much for your comment.
All the metadata have been provided by Scopus /Elsevier in their last update sent to SCImago, including the Coverage's period data. The SJR for 2019 was released on 11 June 2020. We suggest you consult the Scopus database directly to see the current index status as SJR is a static image of Scopus, which is changing every day.
Best Regards, SCImago Team

S **Sigit Susanto** 4 years ago

Whether the supply chain on Runner products could be submitted to this FR Journal?thanks very much

reply

SCImago Team

Melanie Ortiz 4 years ago

Dear Sigit,
Thank you for contacting us. Could you please expand a little bit your comment?
Best Regards, SCImago Team

Leave a comment

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Food Research

Open Access

Years currently covered by Scopus: from 2017 to 2024

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E-ISSN: 2550-2166

Subject area: Agricultural and Biological Sciences: Food Science

Source type: Journal

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