

# SERTIFIKAT

Direktorat Jenderal Penguatan Riset dan Pengembangan,  
Kementerian Riset, Teknologi dan Pendidikan Tinggi



Kutipan dari Keputusan Direktur Jenderal Penguatan Riset dan Pengembangan  
Kementerian Riset, Teknologi dan Pendidikan Tinggi Republik Indonesia

Nomor 36/E/KPT/2019

Peringkat Akreditasi Jurnal Ilmiah Periode VII Tahun 2019

Nama Jurnal Ilmiah

**Biosaintifika: Berkala Ilmiah Biologi**

E-ISSN: 23387610

Penerbit: Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri  
Semarang in collaboration with Perhimpunan Biologi Indonesia  
Ditetapkan Sebagai Jurnal Ilmiah


**TERAKREDITASI PERINGKAT 2**

Akreditasi Berlaku Selama 5 (lima) Tahun, Yaitu  
Volume 11 Nomor 2 Tahun 2019 sampai Volume 16 Nomor 1 Tahun 2024

Jakarta, 13 Desember 2019

Direktur Jenderal Penguatan Riset dan Pengembangan



  
Dr. Muhammad Dimiyati  
NIP. 195912171984021001

## Antibacterial activity of various extracts of averrhoa bilimbi against multidrug resistant bacteria

ME Prastiyanto, FA Wardoyo, W Wilson... - ... : Journal of Biology & ..., 2020 - journal.unnes.ac.id

The multi-drug resistance (MDR) bacteria is a global health problem that causes high mortality every year. Therefore, novel antibacterial agents are needed from natural biological sources. This research aimed to investigate the antibacterial activities of various crude extracts of Averrhoa bilimbi against MDR bacteria. The antibacterial activity was calculated based on the use agar well diffusion assay and the minimum bactericidal concentration (MBC) using Mueller–Hinton broth in a microdilution method. Bacteria from ...

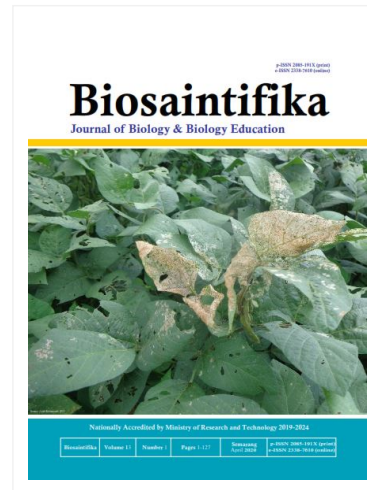
☆ Simpan  Kutip  Dirujuk 9 kali  Artikel terkait 

Menampilkan hasil terbaik untuk penelusuran ini. [Lihat semua hasil](#)

## Biosaintifika: Journal of Biology & Biology Education

Nationally Accredited SINTA 2 by Ministry of Research and Technology/National Agency for Research and Innovation 2019-2024, Number 36/E/KPT/2019

Biosaintifika: Journal of Biology & Biology Education [p-ISSN 2085-191X] e-ISSN 2338-7610 published scientific papers on the results of biology and biology education research (see Focus and Scope). Editor accepts the article has not been published in other media with the writing format as listed on page manuscript writing guidelines (see Author Guidelines). The journal has been indexed in Google Scholar, Microsoft Academic, DOAJ, Dimension, DOI Crossref, EBSCO, CABI, SINTA 2 and published three times a year, on April, August & December and published by Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Semarang Perhimpunan Biologi Indonesia in collaboration with Perhimpunan Biologi Indonesia Tingkat Pusat.



## Vol 13, No 3 (2021): December 2021 Article-in-Press

Articles in press are peer reviewed, accepted articles to be published in this publication. When the final article is assigned to volumes/issues of the publication, the article in press version will be removed and the final version will appear in the associated published volumes/issues of the publication. The date an article was first made available online will be carried over. Please be aware that, although articles in press do not have all bibliographic details available yet, they can already be cited using the year of online publication and the DOI, as follows: author(s), article title, Publication (year), DOI.

### Table of Contents

#### Articles

<b>Determination of Proximate Composition of Local Corn Cultivar from Kisar Island, Southwest Maluku Regency</b> <i>Hermalina Sinay, Nunung Harijati</i> <a href="https://doi.org/10.15294/biosaintifika.v13i3.30527">10.15294/biosaintifika.v13i3.30527</a> Views of Abstract: 85   PDF: 14	PDF 258-266
<b>Histomorphometry of the Duodenum of Ducks (<i>Anas platyrhynchos</i>) after Administration of Nanochitosan in Feed</b> <i>Sunarno Sunarno, Solikhin Solikhin, Kustopo Budiraharjo</i> <a href="https://doi.org/10.15294/biosaintifika.v13i3.32120">10.15294/biosaintifika.v13i3.32120</a> Views of Abstract: 66   PDF: 10	PDF 267-274
<b>Ethnobotanical Studies of Medicinal Plants Used in Managing Diabetes mellitus in Rejang Lebong Districts, Bengkulu - Indonesia</b> <i>Sri Endarti Rahayu, Yusi Marisa, Ikhsan Matondang</i> <a href="https://doi.org/10.15294/biosaintifika.v13i3.32011">10.15294/biosaintifika.v13i3.32011</a> Views of Abstract: 53   PDF: 8	PDF 275-283
<b>Effects of BAP and Lighting Duration on Banana (<i>Musa paradisiaca</i> cv. Raja Bulu) Micropropagation</b> <i>Benyamin Yosafat Manurung, Prita Sari Dewi, Murni Dwiati</i> <a href="https://doi.org/10.15294/biosaintifika.v13i3.25173">10.15294/biosaintifika.v13i3.25173</a> Views of Abstract: 23   PDF: 4	PDF 284-289
<b>Production Improvement of M1 Generation Garut (<i>Maranta arundinacea</i>) Rhizomes through Gamma Radiation Mutation</b> <i>Puspita Deswina, Dody Priadi, Yashanti Berlinda Paradisa, Yuliana Galih Dyan Anggraheni, Enung Sri Mulyaningsih, Ambar Yuswi Perdani, Sri Indrayani</i> <a href="https://doi.org/10.15294/biosaintifika.v13i3.31383">10.15294/biosaintifika.v13i3.31383</a> Views of Abstract: 54   PDF: 2	PDF 290-296
<b>Morphological Differences between <i>Chaetodon auriga</i> and <i>Chaetodon vagabundus</i> based on Truss Morphometric Characters</b> <i>Rosewitha Anggraeni Privieshanti Hadi, Elly Tuti Winarni, Dian Bhagawati, Agus Nuryanto</i> <a href="https://doi.org/10.15294/biosaintifika.v13i3.31466">10.15294/biosaintifika.v13i3.31466</a> Views of Abstract: 50   PDF: 6	PDF 297-304
<b>The Effects of Calina Papaya Leaf Ethanol Extract On Estrus Cycle And Uterus Morphology of Wistar Rats</b> <i>Haris Setiawan, Sri Wijayanti Wulandari, Fauziana Eka Nurwidiantary, Intan Dewantari</i>	PDF 305-312



#### ABOUT THE JOURNAL

- Aims and Scope
- Publication Ethics
- Indexing & Abstracting
- Editorial Team
- Reviewer Team
- Contact

#### COLLABORATE WITH



#### FOR AUTHORS

- Guidelines for Author
- Manuscript Template
- Mendeley Guidelines
- Online Submission
- Google Citation Analysis
- Scopus Citation Analysis

#### Readers

ID	214,139	GB	661
US	17,461	IR	633
IN	3,305	PK	586
MY	2,763	AU	542
PH	2,730	VN	535
TH	1,354	MX	491
CN	1,194	EG	447
BR	1,032	FR	446
JP	973	CA	430
SG	766	DE	411
TR	726	NL	406

Pageviews: 701,166  
Flags Collected: 185



00637652 View My Stats

#### USER

Username

Password

Remember me



Home > About the Journal > **Editorial Team**

## Editorial Team

### Editor-in-Chief

1. Dyah Rini Indriyanti, [SCOPUS ID: 57194044439] Universitas Negeri Semarang, Indonesia

### International Editorial Board

1. Fahrul Huyop, [SCOPUS ID:10240240100] [Universiti Teknologi Malaysia](#), Malaysia
2. Mulyoto Pangestu, [SCOPUS ID: 35488897500] [Monash University](#), Australia
3. Mukh Syaifudin, [SCOPUS ID: 6507831675] [Badan Tenaga Nuklir Nasional](#), Indonesia
4. Yohanes Budi Widianarko, [SCOPUS ID: 6507055401] [Soegijapranata Catholic University, Semarang](#), Indonesia
5. Amir Hamidy, [SCOPUS ID: 24341129500] Research Center For Biology-Cibinong Science Center, Indonesia
6. S. Sudarsono, [SCOPUS ID: 16450098400] Institut Pertanian Bogor, Indonesia
7. Iin Kurnia, [SCOPUS ID 57193537585] Badan Tenaga Nuklir Nasional, Indonesia
8. Mohammad Irham, [SCOPUS ID: 55312221800] Research Center for Biology-Indonesian Institute of Sciences, Bogor, Indonesia

### Associate Editors

1. Talitha Widiatningrum, [SCOPUS ID: 56798544200] Universitas Negeri Semarang, Indonesia
2. Margareta Rahayuningsih, (SCOPUS ID: 57094066700) Universitas Negeri Semarang, Indonesia
3. Amin Retnoningsih, [SCOPUS ID: 51864647000] Universitas Negeri Semarang, Indonesia
4. Enni Suwarsi Rahayu, [SCOPUS ID: 56644635000] Universitas Negeri Semarang, Indonesia
5. Niken Subekti, [SCOPUS ID: 57195315756] Universitas Negeri Semarang, Indonesia



This work is licensed under a Creative Commons Attribution 4.0 International License.



### ABOUT THE JOURNAL

- [Aims and Scope](#)
- [Publication Ethics](#)
- [Indexing & Abstracting](#)
- [Editorial Team](#)
- [Reviewer Team](#)
- [Contact](#)

### COLLABORATE WITH



perhimpunan biologi indonesia

### FOR AUTHORS

- [Guidelines for Author](#)
- [Manuscript Template](#)
- [Mendeley Guidelines](#)
- [Online Submission](#)
- [Google Citation Analysis](#)
- [Scopus Citation Analysis](#)

### Readers

ID 214,139	GB 661
US 17,461	IR 633
IN 3,305	PK 586
MY 2,763	AU 542
PH 2,730	VN 535
TH 1,354	MX 491
CN 1,194	EG 447
BR 1,032	FR 446
JP 973	CA 430
SG 766	DE 411
TR 726	NL 406

Pageviews: 701,166

Flags Collected: 185



**00637658** [View My Stats](#)

### USER

Username

Password

Remember me

## Vol 12, No 2 (2020)

August 2020

DOI: <https://doi.org/10.15294/biosaintifika.v12i2>

### Full Issue

[View or download the full issue](#)

PDF

### Table of Contents

#### Articles

**Pests and Diseases Associated with Yam Bean (*Pachyrhizus erosus*) Cultivation at Farmers' Levels in the Central Region of Benin**

PDF

132-139

*Amoussatou Bouraïma, Rachidatou Sikirou, Bruno Zoeli, Vincent Ezin, SÃˆtonджи Alban Paterne Etchiha Afoha, LÃ©opold Simplicie Gnanadjia, Adolphe Adjanonhoun, Kerstin Hell*

[10.15294/biosaintifika.v12i2.23771](https://doi.org/10.15294/biosaintifika.v12i2.23771) Views of Abstract: 360 | PDF: 157

**Agronomic Performance of Soybean Genotypes in Lowland Paddy Fields under Zero-tillage Condition**

PDF

140-146

*Mochammad Muchlish Adie, Ayda Krisnawati, Rudi Iswanto*

[10.15294/biosaintifika.v12i2.23263](https://doi.org/10.15294/biosaintifika.v12i2.23263) Views of Abstract: 188 | PDF: 106

**Microbial Succession and Chemical Characteristics in Fermentation of Ambonese Arrack (Sopi), Traditional Beverage from Maluku**

PDF

147-154

*Ferymon Mahulette, Dea Indriani Astuti*

[10.15294/biosaintifika.v12i2.23791](https://doi.org/10.15294/biosaintifika.v12i2.23791) Views of Abstract: 275 | PDF: 128

**Isolation, Screening and Identification of Plant Growth-Promoting Endophytic Bacteria from *Theobroma cacao***

PDF

155-162

*Rumella Simarmata, Tiwit Widowati, Tirta Kumala Dewi, Sylvia J. R. Lekatompessy, Sarjiya Antonius*

[10.15294/biosaintifika.v12i2.21280](https://doi.org/10.15294/biosaintifika.v12i2.21280) Views of Abstract: 487 | PDF: 192

**Antibacterial Activity of Various Extracts of *Averrhoa bilimbi* against Multidrug Resistant Bacteria**

PDF

163-168

*Muhammad Evy Prastiyanto, Fandhi Adi Wardoyo, Wildiani Wilson, Sri Darmawati*

[10.15294/biosaintifika.v12i2.23600](https://doi.org/10.15294/biosaintifika.v12i2.23600) Views of Abstract: 862 | PDF: 392

**The Dynamics of Annonaceae Plants Collection and Its Conservation Efforts in Purwodadi Botanic Garden**

PDF

169-177

*Dewi Ayu Lestari, Ahmad Masrum*

[10.15294/biosaintifika.v12i2.23324](https://doi.org/10.15294/biosaintifika.v12i2.23324) Views of Abstract: 150 | PDF: 105

**Characteristics and Antioxidant Activity of Kebar Grass (*Biophytum petersianum*) Extract**

PDF

178-185

*Aminudin Aminudin, Nuri Andarwulan, Nurheni Sri Palupi, Iis Arifiantini*

[10.15294/biosaintifika.v12i2.23820](https://doi.org/10.15294/biosaintifika.v12i2.23820) Views of Abstract: 243 | PDF: 136

**Effects of *Moringa oleifera* Leaves Powder in Fish Feed Toward Growth Rate and Health of *Colossoma macropomum***

PDF

186-191

*Safriada Safriada, Nonong Noviasyah, Khairil Khairil*

[10.15294/biosaintifika.v12i2.22655](https://doi.org/10.15294/biosaintifika.v12i2.22655) Views of Abstract: 195 | PDF: 112

**Plant Diversity and Composition of Three Different Altitudes in Sikka Forest Area - East Nusa Tenggara**

PDF

192-202

*Abban Putri Fiqa, Gebby Agnessya Esa Oktavia*

[10.15294/biosaintifika.v12i2.23565](https://doi.org/10.15294/biosaintifika.v12i2.23565) Views of Abstract: 186 | PDF: 114

**Ethnobotanical Study on Plants Used by Local People in Dusun Beleg, Gumantar Village, North Lombok Regency**

PDF

203-212

*Sawmi Jannaturrayan, Kurniasih Sukenti, Immy Suci Rohyani, Sukiman Dao*

[10.15294/biosaintifika.v12i2.23807](https://doi.org/10.15294/biosaintifika.v12i2.23807) Views of Abstract: 163 | PDF: 93



#### ABOUT THE JOURNAL

[Aims and Scope](#)

[Publication Ethics](#)

[Indexing & Abstracting](#)

[Editorial Team](#)

[Reviewer Team](#)

[Contact](#)

#### COLLABORATE WITH



#### FOR AUTHORS

[Guidelines for Author](#)

[Manuscript Template](#)

[Mendeley Guidelines](#)

[Online Submission](#)

[Google Citation Analysis](#)

[Scopus Citation Analysis](#)

#### Readers

ID	214,139	GB	661
US	17,461	IR	633
IN	3,305	PK	586
MY	2,763	AU	542
PH	2,730	VN	535
TH	1,354	MX	491
CN	1,194	EG	447
BR	1,032	FR	446
JP	973	CA	430
SG	766	DE	411
TR	726	NL	406

Pageviews: 701,166

Flags Collected: 185



**00637657** View My Stats

#### USER

Username

Password

Remember me

# Agronomic Performance of Soybean Genotypes in Lowland Paddy Fields under Zero-tillage Condition

Mochammad Muchlish Adie\*, Ayda Krisnawati, Rudi Iswanto

Indonesian Legume and Tuber Crops Research Institute, Indonesia

\*Email: mm\_adie@yahoo.com

Submitted: 16 March 2020. Revised: 26 April 2020. Accepted: 1 June 2020

**Abstract.** In Indonesia, soybean is mostly cultivated in lowland following the yearly planting pattern of paddy – paddy – soybean under zero-tillage condition. The research aim was to evaluate the agronomic performance of several soybean genotypes in lowland paddy fields under zero-tillage condition. A total of 12 soybean genotypes, including the check varieties of Wilis and Anjasmoro, were evaluated in lowland after rice planting in three locations (Klaten, Pasuruan, and Tabanan). A randomized block design with four replications was used in each location. The soybean yield is a complex character which determined by interrelated agronomic characters. The averages seed yield in Klaten, Pasuruan, and Tabanan were 2.97 t/ha, 3.02 t/ha, and 2.68 t/ha, respectively. Two genotypes produced equal yield with Anjasmoro, i.e. AT12-1062 (3.01 t/ha) and AT12-1037 (3.0 t/ha). Anjasmoro variety had the highest 100 seed weight (15.40 g), and only AT12-1035 showed the equal seed weight. The average days to maturity of 12 genotypes was 83 days. In addition to Anjasmoro variety, soybean genotypes AT12-1062 and AT12-1037 (medium maturity and medium seed size) as the new findings from this study were potential to be developed at lowland paddy fields under zero-tillage condition. The availability of the soybean genotypes adaptive to lowland paddy field under zero tillage condition is important to optimize the soybean productivity as well as the income of farmers in Indonesia.

**Key words:** Adaptability; Minimum Tillage; Wetland; Yield Productivity; Zero Tillage

**How to Cite:** Adie, M. M., Krisnawati, A., & Iswanto, R. (2020). Agronomic Performance of Soybean Genotypes in Lowland Paddy Fields under Zero-tillage Condition. *Biosaintifika: Journal of Biology & Biology Education*, 12 (2), 140-146

**DOI:** <http://dx.doi.org/10.15294/biosaintifika.v12i2.23263>

## INTRODUCTION

In Indonesia, soybeans are mostly cultivated in lowland, according to a year planting pattern of paddy – paddy – soybean. The growing season of food crops in Indonesia consists of the rainy season (November/December), first dry season (February/March), and second dry season (June/July). Soybean in the paddy fields after the rice planting is usually cultivated in the second dry season and it has become the largest soybean area in Indonesia.

Research on Anjasmoro variety which treated by tillage and zero-tillage condition did not obtain the significant yield (Tarigan, 2015). The response of soybean variety of Wilis to three ways of soil processing (only processed around the planting hole, processed once, and processed twice) also showed a non-significant yield (Raintung, 2010). Other research using Grobogan variety revealed that the combination of maximum soil treatment and the weeding time at 24 and 44 days after planting produced the highest seed yield, lowest weed dry weight, highest number of pods per plant, and the highest number of seeds per plant (Akbar, 2012). Furthermore, Hosseini et al. (2016) reported a significant increase in yield of soybean planted in a no-tillage system compared to a conventional tillage system. However, Kiszonas (2010) concluded that no differences exist between

soybean grown in conventional tillage and no-tillage systems in Iowa and that locally adapted cultivars can be selected to maximize yield regardless of tillage system in Iowa. In Indonesia, soybean cultivation in the paddy field is a cultivation system that has been commonly used by farmers (Shurtleff & Aoyagi 2010). On the contrary, zero-tillage farming or minimum tillage is widely used in USA (Mathew et al., 2012; Islam & Reeder, 2014).

Various studies above showed that each soybean genotype responded differently to a certain environment, including zero-tillage environment. This is due to each genotype has different morphological and physiological characteristics. Even many studies found a significant interaction between genotype and environment (Yan & Rajcan, 2002; Pereira et al., 2009; Krisnawati et al., 2016; Krisnawati & Adie, 2018a) which indicates each genotype has a different adaptation to the specific environment. Soybean yield has been considered as a complex character, which not only determined by the adaptability to the environment but also determined by the interaction between the agronomic characters of yield components. Seed morphological characters, i.e. seed width and seed height were reported to play an important role in the yield and quality of the seed (El-Abady et al., 2012; Hu et al., 2013). Seed quality is often a prerequisite for industrial raw materials, including for indus-

# Microbial Succession and Chemical Characteristics in Fermentation of *Ambonese arrack (Sopi)*, Traditional Beverage from Maluku

Ferymon Mahulette<sup>1\*</sup>, Dea Indriani Astuti<sup>2</sup>

<sup>1</sup>Biology Education Study Program, Faculty of Teacher Training and Education, Universitas Pattimura, Indonesia

<sup>2</sup>School of Life Sciences and Technology, Institut Teknologi Bandung, Indonesia

\*Email: ferymonm@gmail.com

Submitted: 19 March 2020. Revised: 10 April 2020. Accepted: 1 June 2020

**Abstract.** *Ambonese arrack* is one of the traditional fermented beverage product in Maluku, Indonesia. The microbiological research of this beverage that is processed using coconut sap as raw material has never been done before. The research aimed to analyze the microbial succession and chemical characteristics during fermentation of *Ambonese arrack*. The sample of coconut sap was taken from traditional producer in Mahia village, Ambon. The dominant microbes in the fermentation of *Ambonese arrack* were *Pichia polymorpha* and *Kloeckera javanica*. The highest numbers of these two microbes was obtained after 15 hours fermentation (9.6 log Cfu/mL and 9.9 Cfu/mL, respectively). The sugar content decreased from 593.3 mg/L to 474.3 mg/L, whereas ethanol content increased from 0.0018 g/L to 0.0100 g/L. The pH value decreased from 4.70 to 3.10. The research has isolated indigenous microbes in *Ambonese arrack* fermentation which was considered as novelty. The bacteria that play a role in fermentation can be used as a starter in the fermentation of various beverage products, especially *Ambonese arrack*. The results of this research can improve the quality of this fermentation product in the future.

**Key words:** *Ambonese Arrack*; Coconut Sap; Ethanol Content; Microbial Succession

**How to Cite:** Mahulette, F., & Astuti, D. I. (2020). Microbial succession and chemical characteristics in fermentation of *Ambonese arrack (sopi)*, traditional beverage from Maluku. *Biosaintifika: Journal of Biology & Biology Education*, 12 (2), 147-154

**DOI:** <http://dx.doi.org/10.15294/biosaintifika.v12i2.23791>

## INTRODUCTION

Processing alcoholic beverages by fermentation is a tradition that has been going on for a long time in various parts of the world (Ohimain, 2016). Some regions in eastern Indonesia, such as Manado, Makassar and Maluku often consume this type of drink. One of the beverage product that is very popular in Maluku community is *Ambonese arrack* (locally named *sopi*). Besides being used as a drink to increase spirit for work, this drink is also used in various traditional ceremonies, so that it is considered as a symbol of friendship in the life of Maluku people (Gunawan, 2019). In other regions, people believe that the drink act to "strengthen of blood" and as an aphrodisiac (Chaves-Lopez et al., 2014)

*Ambonese arrack* is product of distillation of palm sap which has been fermented for more than a day. The palm sap (locally named *sageru*) is the sweet, oysterwhite coloured sap collected from the immature palm spadix (inflorescence) (Sudha et al., 2019). It is a rich source of simple sugars, such as sucrose, glucose, fructose and maltose (Law et al., 2011), The saps used in processing *Ambonese arrack* are from coconut (*Cocos nucifera* L), sugar palm (*Arenga pinnata* Merr) or *koli* (*Borassus sundaicus* Becc). The Maluku people more often use coconut sap to make

*Ambonese arrack* because coconut plants grow a lot in this area. *Ambonese arrack* processing using *koli* sap only by the people of Southwest Maluku (Sahusilawane et al., 2015). Besides being used to make *Ambonese arrack*, it could also be used as a yeast starter for bread making (Olowonibi, 2017). The palm sap that has been fermented can be distilled to produce *Ambonese Arrack*. If it is not distilled, the palm sap will produce *sagero vinegar*

The fermentation process of alcoholic beverages involves microbes (Escalante et al., 2008). Coconut sap used as a raw material contains yeast and bacteria. The composition of these microbes is largely determined by environmental conditions. Generally the dominant yeast in palm sap is *Saccharomyces* (Chandrasekhar et al., 2012), but in different places it is dominated by other species (Kalaiyarasi et al., 2013). Microbial composition is greatly influences the chemical characteristics which include sugar content, ethanol content, and acidity during palm sap fermentation. *Ambonese arrack* processing is still carried out on a household scale and it is not controlled. The equipment used in processing is also not aseptic, so it is possible to have microbial contaminants involved during fermentation. Contaminant microbes can reduce the quality of arrack flavour (Belda et al., 2017). This study aimed to analyze microbial succession and