

## "Base Genep" Instant Spices Quality For Sale in East Denpasar

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### Abstract

*Instant spices is a mixture of several spices that are young to be found in the market at an affordable price, and are usually used immediately as a cooking spice for certain foods. This study aims to determine the quality of the "Base Genep" instant spices sold in the East Denpasar Market. This research is a descriptive study using survey and experimental methods in the laboratory. The number of samples to be studied was 44 samples from 81 populations. The variables in the study were moisture content, pH, Escherichia coli, Total Plate Count (TPC), and mold. The results showed that from 44 samples of "Basa Genep" instant seasoning water content test results obtained were 21.62% - 23.707%, while the pH value of 44 samples of "Basa Genep" instant spice was obtained between 2.2-2.5 so that it meets the requirements.*

*Keyword: Base Genep, spices sold, Balinese foods*

## 1. Introduction

Indonesia is one of the countries rich in spices. The diversity of spices that exist has been widely used by people from various regions in Indonesia to obtain certain properties and characteristics of the product they want to produce. There are quite a few traditional Indonesian foods that use spices as ingredients to add more delicious food flavors. Various types of spices that are typical in Indonesia, for example, Rawon spices (typical Surabaya), rendang spices (typical of Padang), Opor spices (typical of Central Java), and many other spices, one of which is the Balinese "Basa Genep" spice.

Modern Balinese society demands to carry out all its activities effectively and efficiently. This is reflected in their lifestyle, such as how to choose a domicile, how to communicate, transportation, and also in the consumption pattern of many people who still use ready-to-eat food and beverage products, as well as semi-processed food. One product that is very easy to get is the wet "Basa genep" instant seasoning. This instant spice is very practically used by Balinese people in general. Because most Balinese foods such as Babi guling, Ayam betutu, Lawar are generally complicated and cannot be served quickly, one way to serve them quickly and easily is to use ready-to-use seasonings, namely instant Basa Genep spices in wet form. But in reality, there are still many. The purpose of this research was to determine the quality of instant kitchen spices "Base Genep" sold in the East Denpasar Market.

## 2. Material and Methods

### 2.1 Place and Time of Research

This research was conducted at the Laboratory of the Faculty of Agriculture, Warmadewa University, and Denpasar Veterinary Center.

## 2.2 Research Materials

Easy Test Kit, Merckoquant Kit, Durham tube, Petri dish, test tube, 1 ml, 2 ml, 5 ml, 10 ml pipette, media bottle, scissors, tweezers, inoculation needle (ose), stomacher, bunsen burner, pH meter, scale, magnetic stirrer, tube shaker (vortex), incubator, water bath, autoclave, sterile cabinet (clean bench), refrigerator, freezer, volumetric pipette, colony counter, inoculation needle (ose).

Spices Traditional "Base Genep" seasoning taken from the market circulating in East Denpasar. Aquades, BPW (Buffered Pepton Water), PCA (Plate Count Agar).

## 2.3 Research Design

This type of research is a descriptive study, this research uses survey and experimental methods in the laboratory. The population in the study was obtained by a survey using a census, namely the number of traders of traditional instant spices "Base Genep" in the market of East Denpasar sub-district as many as 81 traders. Based on the Slovin formula, namely the determination of the minimum number of samples to be studied with a set margin of error of 10% (95% confidence level), the calculation is as follows:

$$\frac{N}{(1 + (N \times e^2))}$$

Where n is the sample, N is the population and "e" is the margin of error (10%). With the Slovin formula, the minimum number of samples to be studied is 44 samples from 81 existing populations.

## 2.4 Research implementation

This research stage consisted of sampling, identification of total mold, identification of *Escherichia coli*, identification of total plate count (TPC), water content, pH test, and data analysis.

## 2.5 Data Analysis

Based on the results of the research data obtained, a descriptive analysis will be carried out. The descriptive analysis carried out will refer to microbiological contamination for seasoning testing (wet) according to BPOM RI Regulation No: 16 of 2016. From the results of this analysis, it will be known the contaminants contained in traditional spices found in the East Denpasar market, while for the analysis of content data Water and pH were analyzed using descriptive statistics

## 2. Results and Discussion

### 3.1 Total Plate Count

The results of the Total Plate Count (TPC) test on 44 samples of "Basa Genep" instant seasoning obtained from 7 traditional markets in East Denpasar District all meet the requirements of BPOM RI Regulation No: 16 of 2016, namely the maximum limit of Total Plate Count (TPC) contamination in spices. instant alkaline  $1 \times 10^4$  Colonies/gram. The antimicrobials of spices are compounds such as phenols, flavonoids, katepenoids acetoksicavikol, acetates, and other essential oils. These compounds can suppress microbial growth because they can act as enzyme coagulators so that cell wall formation is inhibited. The results of the Total Plate Count (TPC) test can be seen in Table 1.

Table 1  
Total Plate Count (TPC) Test Results on "Basa Seasoning Samples."  
Genep "which is circulating in the Traditional market of Denpasar District

No	Market Name	Code Sample	Result Testing (Colonies / g)	Information
1.	Yadnya Market	PS1	5x101	MS
2.	Yadnya Market	PS2	2x101	MS
3.	Yadnya Market	PS3	4x101	MS
4.	Yadnya Market	PS4	5x101	MS
5.	Yadnya Market	PS5	8x101	MS
6.	Yadnya Market	PS6	1.1x102	MS
7.	Yadnya Market	PS7	7x101	MS
8.	Tamba Market	PS8	1.1x102	MS
9.	Tamba Market	PS9	8x101	MS
10.	Tamba Market	PS10	7.5x101	MS
11.	Tamba Market	PS11	6x101	MS
12.	Tamba Market	PS12	2x101	MS
13.	Gunung Sari Market	PS13	3.0x101	MS
14.	Gunung Sari Market	PS14	4.1x102	MS
15.	Gunung Sari Market	PS15	5.1x102	MS
16.	Gunung Sari Market	PS16	5.4x102	MS
17.	Gunung Sari Market	PS17	4.0x101	MS
18.	Gunung Sari Market	PS18	4.4x102	MS
19.	Gunung Sari Market	PS19	4.0x101	MS
20.	Kerta Sari Market	PS20	1.1x102	MS
21.	Kerta Sari Market	PS21	1.1x102	MS
22.	Kerta Sari Market	PS22	7.0x101	MS
23.	Kerta Sari Market	PS23	1.6x102	MS
24.	Kerta Sari Market	PS24	8.0x101	MS
25.	Kerta Sari Market	PS25	6.0x101	MS
26.	Kerta Sari Market	PS26	1.7x102	MS
27.	Kerta Sari Market	PS27	2.3x102	MS
28.	Kerta Sari Market	PS28	1.3x102	MS
29.	Waringin Sari Market	PS29	1.1x102	MS
30.	Waringin Sari Market	PS30	7.0x101	MS
31.	Waringin Sari Market	PS31	1.2x102	MS
32.	Waringin Sari Market	PS32	1.5x102	MS
33.	Pakraman trainer market	PS33	1.2x102	MS
34.	Pakraman trainer market	PS34	9.0x101	MS
35.	Pakraman Penatih market	PS35	2.0x102	MS
36.	Pakraman Penatih market	PS36	1.6x102	MS
37.	Pakraman Penatih market	PS37	1.0x102	MS
38.	Pakraman Penatih market	PS38	2.2x102	MS
39.	Pakraman Penatih market	PS39	2.2x102	MS
40.	PasarTanjung Bungkak	PS40	2.3x102	MS
41.	Tanjung Bungkak Market	PS41	1.8x102	MS
42.	Tanjung Bungkak Market	PS42	1.3x102	MS
43.	Tanjung Bungkak Market	PS43	1.1x102	MS
44.	Tanjung Bungkak Market	PS44	1.4x102	MS

MS: Qualified

### 1.2 *Escherichia coli*

The results of *Escherichia coli* testing on 44 samples of "Basa Genep" instant seasoning obtained from 7 traditional markets in East Denpasar District all meet the requirements of BPOM RI Regulation No: 16 of 2016 based on ISO 4833-1-2013. That is the maximum limit of *Escherichia coli* contamination in wet instant seasoning <3.6 / gram. *Escherichia coli* is a group of coliform bacteria which has the property to grow at a temperature of 10-40 ° C, with an optimal temperature of 37 ° C [1]. *Escherichia coli* is relatively very sensitive to heat and can be activated at the *pasteurization* temperature of the food or during food cooking [2].

The content of secondary metabolite compounds in ginger, especially the flavonoids, phenols, terpenoids, and essential oils [3]. These secondary metabolite compounds produced by the *Zingiberaceae* plant can generally inhibit the growth of pathogenic bacteria that are detrimental to

human life, including *Escherichia coli*, *Bacillus subtilis*, *Staphylococcus aureus*, *Neurospora sp.*, *Rhizopus sp.*, and *Penicillium sp.* *Escherichia coli* test results can be seen in Table 2.

Table 2  
Escherichia coli test results on "Basa Genep" seasoning samples  
which is in the Traditional market of East Denpasar District

No	Market Name	Sample Code	Test result (Colonies / gram)	Information
1.	Yadnya Market	PS1	<3.6 / g	MS
2.	Yadnya Market	PS2	<3.6 / g	MS
3.	Yadnya Market	PS3	<3.6 / g	MS
4.	Yadnya Market	PS4	<3.6 / g	MS
5.	Yadnya Market	PS5	<3.6 / g	MS
6.	Yadnya Market	PS6	<3.6 / g	MS
7.	Yadnya Market	PS7	<3.6 / g	MS
8.	Tamba Market	PS8	<3.6 / g	MS
9.	Tamba Market	PS9	<3.6 / g	MS
10.	Tamba Market	PS10	<3.6 / g	MS
11.	Tamba Market	PS11	<3.6 / g	MS
12.	Tamba Market	PS12	<3.6 / g	MS
13.	Gunung Sari Market	PS13	<3.6 / g	MS
14.	Gunung Sari Market	PS14	<3.6 / g	MS
15.	Gunung Sari Market	PS15	<3.6 / g	MS
16.	Gunung Sari Market	PS16	<3.6 / g	MS
17.	Gunung Sari Market	PS17	<3.6 / g	MS
18.	Gunung Sari Market	PS18	<3.6 / g	MS
19.	Gunung Sari Market	PS19	<3.6 / g	MS
20.	Kerta Sari Market	PS20	<3.6 / g	MS
21.	Kerta Sari Market	PS21	<3.6 / g	MS
22.	Kerta Sari Market	PS22	<3.6 / g	MS
23.	Kerta Sari Market	PS23	<3.6 / g	MS
24.	Kerta Sari Market	PS24	<3.6 / g	MS
25.	Kerta Sari Market	PS25	<3.6 / g	MS
26.	Kerta Sari Market	PS26	<3.6 / g	MS
27.	Kerta Sari Market	PS27	<3.6 / g	MS
28.	Kerta Sari Market	PS28	<3.6 / g	MS
29.	Waringin Sari Market	PS29	<3.6 / g	MS
30.	Waringin Sari Market	PS30	<3.6 / g	MS
31.	Waringin Sari Market	PS31	<3.6 / g	MS
32.	Waringin Sari Market	PS32	<3.6 / g	MS
33.	Pakraman trainer market	PS33	<3.6 / g	MS
34.	Pakraman trainer market	PS34	<3.6 / g	MS
35.	Pakraman Penatih market	PS35	<3.6 / g	MS
36.	Pakraman Penatih market	PS36	<3.6 / g	MS
37.	Pakraman Penatih market	PS37	<3.6 / g	MS
38.	Pakraman Penatih market	PS38	<3.6 / g	MS
39.	Pakraman Penatih market	PS39	<3.6 / g	MS
40.	Tanjung Bungkak Market	PS40	<3.6 / g	MS
41.	Tanjung Bungkak Market	PS41	<3.6 / g	MS
42.	Tanjung Bungkak Market	PS42	<3.6 / g	MS
43.	Tanjung Bungkak Market	PS43	<3.6 / g	MS
44.	Tanjung Bungkak Market	PS44	<3.6 / g	MS

MS: Qualify

### 3.3 Functions

The results of mold testing on 44 samples of "Basa Genep" instant seasoning obtained from 7 traditional markets in East Denpasar District all met the requirements of BPOM RI Regulation No: 16 of 2016, namely the maximum limit of mold contamination in  $2 \times 10^2$  colonies/gram of wet instant seasoning. The results of the mold test can be seen in Table 3.

Table 3  
Results of Testing the Water Content of the "Basa Genep" Instant Seasoning there is a traditional market in the East Denpasar sub-district.

No	Name Market	Codes Sample	Result Testing	Information
1.	Yadnya Market	PS1	NSG	MS
2.	Yadnya Market	PS2	NSG	MS
3.	Yadnya Market	PS3	NSG	MS
4.	Yadnya Market	PS4	NSG	MS
5.	Yadnya Market	PS5	NSG	MS
6.	Yadnya Market	PS6	NSG	MS
7.	Yadnya Market	PS7	NGS	MS
8.	Tamba Market	PS8	NSG	MS
9.	Tamba Market	PS9	NSG	MS
10.	Tamba Market	PS10	NSG	MS
11.	Tamba Market	PS11	NGS	MS
12.	Tamba Market	PS12	NGS	MS
13.	Gunung Sari Market	PS13	NGS	MS
14.	Gunung Sari Market	PS14	NGS	MS
15.	Gunung Sari Market	PS15	NGS	MS
16.	Gunung Sari Market	PS16	NGS	MS
17.	Gunung Sari Market	PS17	NGS	MS
18.	Gunung Sari Market	PS18	NGS	MS
19.	Gunung Sari Market	PS19	NGS	MS
20.	Kerta Sari Market	PS20	NGS	MS
21.	Kerta Sari Market	PS21	NGS	MS
22.	Kerta Sari Market	PS22	NGS	MS
23.	Kerta Sari Market	PS23	NGS	MS
24.	Kerta Sari Market	PS24	NGS	MS
25.	Kerta Sari Market	PS25	NGS	MS
26.	Kerta Sari Market	PS26	NGS	MS
27.	Kerta Sari Market	PS27	NGS	MS
28.	Kerta Sari Market	PS28	NGS	MS
29.	Waringin Sari Market	PS29	NGS	MS
30.	Waringin Sari Market	PS30	NGS	MS
31.	Waringin Sari Market	PS31	NGS	MS
32.	Waringin Sari Market	PS32	NGS	MS
33.	Pakraman Trainer Market	PS33	NGS	MS
34.	Pakraman Trainer Market	PS34	NGS	MS
35.	Pakraman Penatih Market	PS35	NGS	MS
36.	Pakraman Penatih Market	PS36	NGS	MS
37.	Pakraman Penatih Market	PS37	NGS	MS
38.	Pakraman Penatih Market	PS38	NGS	MS
39.	Pakraman Penatih Market	PS39	NGS	MS
40.	Tanjung Bungkak Market	PS40	NGS	MS
41.	Tanjung Bungkak Market	PS41	NGS	MS
42.	Tanjung Bungkak Market	PS42	NGS	MS
43.	Tanjung Bungkak Market	PS43	NGS	MS
44.	Tanjung Bungkak Market	PS44	NGS	MS

NGS: (Non-Specific Growth)

According to [4] growth was not found in instant spices because it was caused by one of the raw materials for the instant seasoning itself, namely garlic. The ability of garlic tubers to inhibit microbial growth is very broad, including viruses, bacteria, protozoa, and fungi. Judging from the optimum temperature for mold growth, which is around 25-30°C, mold is a microbe that is most likely to damage instant seasoning products during storage. Likewise in terms of the results of the

pH test which tends to be acidic. Some molds can grow in a wide pH range of 2.0 - 8.5. However, based on the observations, there was no found any mold growth in the "Basa Genep" Instant Seasoning product [5]. This is because the storage time for instant spices ranges from 2-3 days.

### 3.4 Moisture Content The water

The content of the seasoning was 21.62%-23.70%. This figure shows the amount of water contained in Basa Genep instant seasoning found in the traditional market, East Denpasar sub-district. Water content test results can be seen in Table 4 and Figure 1.

Table 4  
Results of Testing the Water Content of the "Basa Genep" Instant Seasoning there is a traditional market in the East Denpasar sub-district.

No.	Market Name	Code Sample	Score Kadar Air	Information
1.	Yadnya Market	PS1	23.70	TMS
2.	Yadnya Market	PS2	22.75	TMS
3.	Yadnya Market	PS3	22.67	TMS
4.	Yadnya Market	PS4	21.56	TMS
5.	Yadnya Market	PS5	22.85	TMS
6.	Yadnya Market	PS6	21.89	TMS
7.	Yadnya Market	PS7	22.31	TMS
8.	Tamba Market	PS8	21.62	TMS
9.	Tamba Market	PS9	22.47	TMS
10.	Tamba Market	PS10	23.18	TMS
11.	Tamba Market	PS11	22.37	TMS
12.	Tamba Market	PS12	22.64	TMS
13.	Gunung Sari Market	PS13	22.40	TMS
14.	Gunung Sari Market	PS14	22.84	TMS
15.	Gunung Sari Market	PS15	21.95	TMS
16.	Gunung Sari Market	PS16	22.46	TMS
17.	Gunung Sari Market	PS17	22.54	TMS
18.	Gunung Sari Market	PS18	23.01	TMS
19.	Gunung Sari Market	PS19	22.06	TMS
20.	Kerta Sari Market	PS20	22.47	TMS
21.	Kerta Sari Market	PS21	22.34	TMS
23.	Kerta Sari Market	PS23	23.69	TMS
24.	Kerta Sari Market	PS24	22.59	TMS
25.	Kerta Sari Market	PS25	22.43	TMS
26.	Kerta Sari Market	PS26	23.44	TMS
27.	Kerta Sari Market	PS27	22.58	TMS
28.	Kerta Sari Market	PS28	23.05	TMS
29.	Waringin Sari Market	PS29	22.27	TMS
30.	Waringin Sari Market	PS30	22.17	TMS
31.	Waringin Sari Market	PS31	22.36	TMS
32.	Waringin Sari Market	PS32	22.78	TMS
33.	Pakraman Penatih Market	PS33	22.04	TMS
34.	Pakraman Penatih Market	PS34	22.05	TMS
35.	Pakraman Penatih Market	PS35	22.25	TMS
36.	Pakraman Penatih Market	PS36	23.20	TMS
37.	Pakraman Penatih Market	PS37	21.86	TMS
38.	Pakraman Penatih Market	PS38	22.30	TMS
39.	Pakraman Penatih Market	PS39	22.15	TMS
40.	Tanjung Bungkak Market	PS40	22.54	TMS
41.	Tanjung Bungkak Market	PS41	22.36	TMS
42.	Tanjung Bungkak Market	PS42	22.92	TMS
43.	Tanjung Bungkak Market	PS43	23.40	TMS
44.	Tanjung Bungkak Market	PS44	22.86	TMS

TMS: Not eligible

According to [6] spices can also increase the water content of spices. This is due to the nature of the spices that can draw moisture from the surrounding environment during the spice storage process. The higher the moisture content in a product, the faster the product will break down. Bacterial growth is faster in products with high water content [7].

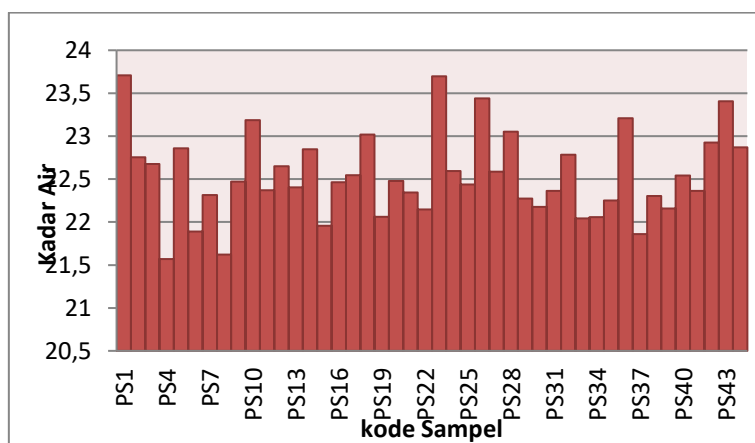


Figure 1

Results of Water Content Testing for Instant Seasoning "Basa Genep" which is located in the traditional market, East Denpasar sub-district.

### 3.5. Degree of Acidity (pH)

The results of pH testing on 44 samples of Basa Genep instant seasoning obtained from 7 traditional markets in East Denpasar sub-district have a pH value ranging from 2.2-5.25, all samples meet the BPOM RI No: 16 the year 2016 requirements, namely the maximum pH value limit at the wet instant seasoning is 5-6. The storage time for the wet instant spices has a significant effect on the pH value of the "Basa Genep" instant spices. The pH of the Basa Genep instant spices ranges from 2.2 to 5.25. At low pH, the growth of some bacteria will die so that it can extend the shelflife.

In addition to the shelf life of the antimicrobial activity of traditional industrial cooking spices against pathogenic and destructive bacteria, it is stated that if the pH value is low enough around 4.0 - 6.0 then bacteria generally cannot reproduce properly in wet instant seasonings. It is suspected that the components of spices, such as red chilies and turmeric, can cause the low pH value of the spices [8]. The results of the acidity degree (pH) test can be seen in Table 5 and Figure 2.

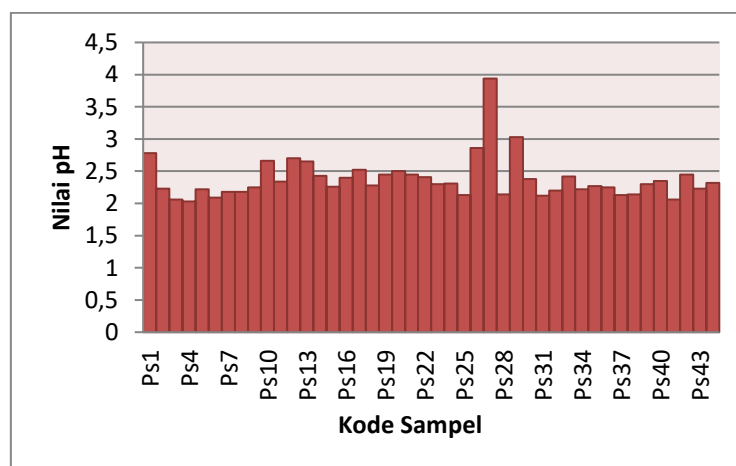


Figure 2.

The test results on the pH value of the "Basa Genep" instant spices there is a traditional market in the East Denpasar sub-district



Table 5  
The test results on the pH value of "Base Genep" instant seasoning  
there is a traditional market in the East Denpasar sub-district.

No	Market Name	Code sample	pH value	Information
1.	Yadnya Market	PS1	2.78	MS
2.	Yadnya Market	PS2	2.23	MS
3.	Yadnya Market	PS3	2.06	MS
4.	Yadnya Market	PS4	2.03	MS
5.	Yadnya Market	PS5	2.22	MS
6.	Yadnya Market	PS6	2.09	MS
7.	Yadnya Market	PS7	2.18	MS
8.	Tamba Market	PS8	2.18	MS
9.	Tamba Market	PS9	2.25	MS
10.	Tamba Market	PS10	2.66	MS
11.	Tamba Market	PS11	2.34	MS
12.	Tamba Market	PS12	2.70	MS
13.	Gunung Sari Market	PS13	2.65	MS
14.	Gunung Sari Market	PS14	2.43	MS
15.	Gunung Sari Market	PS15	2.26	MS
16.	Gunung Sari Market	PS16	2.40	MS
17.	Gunung Sari Market	PS17	2.52	MS
18.	Gunung Sari Market	PS18	2.28	MS
19.	Gunung Sari Market	PS19	2.45	MS
20.	Kerta Sari Market	PS20	2.50	MS
21.	Kerta Sari Market	P21	2.45	MS
22.	Kerta Sari Market	PS22	2.41	MS
23.	Kerta Sari Market	PS23	2.30	MS
24.	Kerta Sari Market	PS24	2.31	MS
25.	Kerta Sari Market	PS25	2.13	MS
26.	Pasar Kerta Sari	PS26	2.86	MS
27.	Kerta Sari Market	PS27	3.94	MS
28.	Kerta Sari Market	PS28	2.14	MS
29.	Waringin Sari Market	PS29	3.03	MS
30.	Waringin Sari Market	PS30	2.38	MS
31.	Waringin Sari Market	PS31	2.12	MS
32.	Waringin Sari Market	PS32	2.20	MS
33.	Pakraman Penatih Market	PS33	2.42	MS
34.	Pakraman Penatih Market	PS34	2.22	MS
35.	Penatih Pakraman market	PS35	2.27	MS
36.	Penatih Pakraman market	PS36	2.25	MS
37.	Penatih Pakraman market	PS37	2.13	MS
38.	Penatih Pakraman market	PS38	2.14	MS
39.	Penatih Pakraman market	PS39	2.30	MS
40.	Tanjung Bungkak Market	PS40	2.35	MS
41.	Tanjung Bungkak Market	PS41	2.06	MS
42.	Tanjung Bungkak Market	PS42	2.45	MS
43.	Tanjung Bungkak Market	PS43	2.23	MS
44.	Tanjung Bungkak Market	PS44	2.32	MS

MS: Qualified



## Conclusion

Based on the laboratory test results on 44 samples of instant seasoning "Base Genep", the results of the Total Plate Count (TPC) test on 44 samples of instant seasoning "Base Genep" all meet the requirements of BPOM RI Regulation No: 16 of 2016, namely the maximum limit of Total Plate Count (TPC) on instant base seasoning 1x10<sup>4</sup> Colonies/gram, *Eschericia coli* test results on 44 samples of "Base Genep" instant spices all meet the requirements of BPOM RI Regulation No: 16 of 2016, namely the maximum limit of *Eschericia coli* contamination in wet instant seasonings <3.6 / gram, the results of the mold test on 44 samples of instant seasoning "Base Genep" all meet the requirements of BPOM RI Regulation No: 16 of 2016, namely the maximum limit of mold contamination 2x10<sup>4</sup> colony / g. The water content of the spices was 21.62% - 23.707%, the pH value ranged from 2.2-3.94, all samples fulfilled the BPOM RI No: 16/2016, namely the maximum pH value of the 5-6 alkaline ingredients.

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