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Identify the Saccharin Content in Iced Tea Sold in Jl. Sapta Marga, Sapta Marga Village, Mataram City

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Abstract
Saccharin is an artificial sweetener made from sodium salt, sodium saccharin with the chemical formula $C_7H_5NO_3S$ from saccharin acid which is in the form of white crystalline powder, easily soluble in water, odorless and very sweet. Saccharin has a sweetness level of 300-600 times that of natural sweeteners. This artificial sweetener also has a maximum limit for its use, namely according to Bpom No. 11. In 2019, it is 954 mg/l. The aim of the research is to determine whether there is a saccharin compound present or not and to find out how much saccharin is contained in iced tea drinks circulating on the Sapta Marga road in the Mataram City area.Sampling uses predeterminet criteria. This type of research is descriptive qualitative. The analysis in this research was carried out in 2 types, namely qualitative analysis using the resorcinol color test method and quantitative analysis using the Uv-Vis spectrophotometry method. The results of qualitative identification using the color test method carried out on 5 samples of iced tea drinks did not produce positive samples so that all samples were not continued to the quantitative test stage.

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INTRODUCTION

Food safety is an effort to ensure that the food or drinks consumed by the public are healthy, safe and do not endanger health (Al Ayyubi, 2018). So it does not endanger body health if consumed by the public, both in the short and long term (Andalia et al, 2021). BTP (food additives) are food additives which are made to influence the properties or shape of food in order to increase the taste, maintain the taste, and improve the taste, color and texture of the food(Fitriani A, 2019); Saccharin is a type of food additive in the form of a sweetener which is still widely used by industry because its price is relatively affordable and is able to provide a sweeter taste and is able to reduce production costs (Lidiawati D, 2022)

Food additives such as sweeteners often added to iced drink snacks. The addition of the sweetener works to improve taste and aroma. Iced drinks are popular with many people people and are widely sold in markets such as ice syrup, young coconut ice, iced tea, and cendol ice that tastes delicious, sweet and with an attractive appearance makes This drink is liked by many people. Production is mostly carried out by industry small scale which is usually lacking pay attention to cleanliness and safety. Type of sweetener grouped into two, namely sweeteners natural and synthetic (Galih et al, 2018). Several types of sweeteners natural substances used include sucrose, lactose, maltose, galactose, sorbitol, mannitol, glycerol, and glycine. Meanwhile sweetener Synthetics include saccharin, cyclamate,

aspartame, and dulsin. But sweeteners that are often used are saccharin and cyclamatea (Nuraenah et al, 2023). Iced tea is one of the drinks that is very popular at the moment, various types of iced tea with different brands are widely sold. Es eh consists of a tea solution which is usually added with sugar or additional sweetener. Artificial sweeteners are a type of food additive that is permitted with conditions that meet standards. One of the artificial penises that is allowed is saccharin (Marliza et al, 2019)

Saccharin is a synthetic chemical that is classified as a food or drink additive. Saccharin is used in food or beverage processing as a substitute for sugar. This compound has a much higher sweet taste than sugar, which is around 300 -700 times. Packaged drinks that often use saccharin as a sweetener are syrup, refreshing drinks, jelly, etc., which are often consumed by the general public (Melinda et al, 2022). Saccharin is an artificial sweetener made from the sodium salt of saccharin acid in the form of a white crystalline powder, odorless and very sweet. The intensity of the sweet taste of saccharin sodium salt is quite high, namely approximately 200-700 times 10% sucrose. Apart from its sweet taste, saccharin also has a bitter taste which is caused by the low purity of the synthesis process (Mulyan et al, 2022). The aim of this research is to determine whether there is saccharin content of iced and to determine the level of saccharin used by traders of iced tea in Jl. Sapta Marga.

METHOD

Tools and Materials

The tools used in this research include funnels, cuvettes, Elenmeyer, 50 ml measuring cups, 5 ml, 10 ml and 25 ml measuring pipettes, drop pipettes, stirring rods, rubber suction cups, hotplates, stirring rods, drop pipettes, separating funnels. and Chemical Beakers. The materials used in this research include Ice, Aquadest. HCL 25%, Ether, Recorcinol, Concentrated H_2SO_4, NaOH 10%, Saccharin and Ethanol 70%.

Preparing Sample

Until the tea is bought from traders who sell on Jl. Sapta Marga, Sapta Marga sub-district, Mataram city. Weigh the sample containing saccharin, dissolve it in distilled water, and dilute to a certain volume and If necessary, carry out filtering to remove impurities.

Qualitative Test of Saccharin (Color Test/Resorcinol)

A total of 5 ml of 25% HCl was added to 50 mL of sample and extracted with 25 mL of ether, and The ether solution that has been separated is evaporated. Next, 15 drops of concentrated H2SO4 and 40 mg of resorcinol (0.04 g) are added and heated until brown.

Sample Measurements

Pipette 5 ml of sample solution into a 50 ml volumetric flask. Perform the same procedure as creating the calibration curve (step 2) . Measure the absorbance of the sample solution at a wavelength of 520 nm.

Calculation of Saccharin Concentration

Enter the sample absorbance value into the linear regression equation of the calibration curve to obtain the saccharin concentration in the sample (AOAC Iternational, 2019).

RESULTS AND DISCUSSION

Based on the results of saccharin examination in ice tea samples, the following results were obtained as shown in Table 1.

Table 1. Examination results for the Saccarhin in Iced Tea

Sample	Observing Color	Check up Result
Sample A	Fawn	Negative
Sample B	Reddish Ash	Negative
Sample C	Brownish Orange	Negative
Sampl D	Brownish Yellow	Negative
Sample E	Light Brown	Negative

From the table above it can be seen that the five samples examined did not contain saccharin. A sample is said to be positive for saccharin if the sample forms a green floursense color. Identification of saccharin was carried out on 5 samples purchased from different traders and which met the criteria as samples sold along Sapta Marga street, Mataram City. This qualitative test is the initial stage carried out to identify saccharin by looking at the color reaction that occurs in the sample using reagents. This test is carried out to obtain positive or negative results for samples containing saccharin.

From the results of identifying saccharin with using the color test extraction method which uses 10% HCl solution, ether, H2SO4, resorcinol and NaOH 10% as reagents in all samples, shows that saccharin is not used in the product the iced drink. Saccharin is rare discovered because this sweetener is still leaves a bitter taste in the product and the price is more expensive than sweeteners other made. Saccharine among sellers Ice drinks are not that well known because usually used for large scale industry such as soft drink products (Utami.D.P, 2018).

Saccharin analysis was carried out using the color reaction method using 5 ml of 25% HCL solution to convert the saccharin salt in the sample into saccharin acid which is insoluble in water, then adding 25 ml of ether. The use of ether is used for the extraction process. Each sample is then extracted with ether using a separating funnel until two separate layers are formed, namely a yellow bottom layer and a clear top layer. The two layers are formed due to the difference in the density of ether and the ether can evaporate so that it is easily lifted upwards by the density of the sample so that it separates and forms two layers and the saccharin is carried away in the ether (Pramestya 2019). Ether solvent is used because it is an organic solvent that does not mix with water and saccharin is easily soluble in ether solvent (Pratomo, 2021)

In general, saccharin salt is in the form of white crystals, odorless or has a weak aromatic odor, and is easily soluble in water, and tastes sweet. The combination of its use with other low-calorie artificial sweeteners is synergistic. Saccharin is usually mixed with other sweeteners such as cyclamate and aspartame with the aim of masking the unpleasant taste of saccharin and strengthening the sweet taste. A combination of saccharin and cyclamate in a ratio of 1:10 is the best mixture as a sweetener that resembles sugar in drinks. Saccharin is not metabolized by the body, is slowly absorbed by the intestines and quickly excreted in the urine without change. Saccharin is the earliest sweetener on the market. The daily consumption value permitted by the FAO is 5 mg/kgBW/day, whereas other research shows that saccharin at a dose of 30-300 mg/day (0.43-4.3 mg/kg/day) does not increase the risk of human cancer (Utami.D.P, 2018).

After the ether layer is separated, it is evaporated in a fume cupboard so that the ether in the sample evaporates. The evaporation of the ether is indicated by the disappearance of the pungent odor of the ether. After evaporation, 15 drops of concentrated H_2SO_4 were added. The purpose of adding concentrated H2SO4 was to break down the salt in the saccharin and continued with the addition of 0.04g of resorcinol and heated at a low temperature until brown. The purpose of adding resorcinol ($C_6H_6O_2$), is to give flourose green color when it reacts with saccharin. The function of adding 10% NaOH is to clarify the color change in the

final results in all samples. Positive samples are indicated by the formation of a green fluorescent color on the sample (Yunantarinigsih et al, 2021). The results obtained from all iced tea samples were said to be negative because they did not show a change in the green color of floursense, so they did not proceed to the quantitative test stage using Uv-Vis spectrophotometry.

One of the factors that causes saccharin to be rarely used by traders is because traders still have minimal knowledge regarding the existence of saccharin. Apart from that, saccharin is also very rarely found compared to other artificial sweeteners such as cyclamate, aspartame, and others. Saccharin sweeteners are rarely found because most saccharin sweeteners are used in candy products, jams, salad dressings and are commonly used in health products. The artificial sweetener saccharin was not found because artificial sweeteners are also used in the beverage and food industries on a large scale (Yunarto et al, 2024)

CONCLUSION

In conclusion, of the five iced tea samples examined, all five did not contain saccharin. This is additional information for people in the surrounding area. People are no longer worried about consuming iced tea sold by traders in the area. It is hoped that future researchers will examinfood additives or artificial sweeteners.

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