Acceptance of the Sensory Process for the Development of a Salad Dressing Product combined with Yanang Leaves Juice and Its Preservation at Room Temperature

การยอมรับกระบวนการทางประสาทสัมผัสในการพัฒนาผลิตภัณฑ์น้ำสลัดผสมน้ำใบย่านางและการเก็บรักษาที่อุณหภูมิห้อง

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Abstract

The objective of this research was to develop a clear salad dressing mixed with the Yanang leaves juice. Three standard formulas for clear salad dressing recipes were formulated and the sensory test was performed in order to select for the best acceptance. The Yanang leaves juice

was added to the selected formula of clear salad dressing for the ratio of 15, 20, and 25%. Sensory tests were performed to determine product acceptance. The microbiological quality of the salad dressing mixed with Yanang leaves juice was assessed for the shelf-life indicator. The results showed that the standard formula of salad dressing code 937 (25%) was the most accepted. The average acceptance scores were 6. 60, 6.40, 6. 86, 6. 36, and 7.02 for color, aroma, taste, texture, and overall liking, respectively. The ratio of Yanang leaves juice to clear salad dressing with the highest acceptance score was 25% with the sensory score of 7.28, 7.26, 7.44, 7.04, and 7.76 for color, aroma, taste, texture, and overall liking, respectively. The microbiology test was found to be within the safety range of the standard.

Keywords: Salad dressing, Yanang leaves, Sensory acceptance

บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อพัฒนาผลิตภัณฑ์น้ำสลัดใสผสมใบย่านาง โดยศึกษาสูตรมาตรฐานสำหรับสูตรน้ำสลัดใสจำนวน 3 สูตร จากนั้นนำสูตรมาตรฐานที่ผ่านการทดสอบทางประสาทสัมผัสมาศึกษาอัตราส่วนของน้ำใบย่านางต่อน้ำสลัดใส โดยแปรอัตราส่วนของน้ำใบย่านางเป็น 3 ระดับ คือร้อยละ 15, 20 และ 25 ทำการทดสอบทางประสาทสัมผัสเพื่อหาการยอมรับของผลิตภัณฑ์และนำไปศึกษาอายุการเก็บรักษาโดยการประเมินคุณภาพทางจุลชีววิทยาของน้ำสลัดใสผสมใบย่านางโดยใช้มาตรฐานผลิตภัณฑ์ชุมชน (น้ำสลัด) เป็นเกณฑ์มาตรฐาน ผลการวิจัยพบว่าน้ำสลัดสูตรมาตรฐานรหัส 937 (25%) เป็นสูตรมาตรฐานที่ได้รับการยอมรับมากที่สุด โดยมีคะแนนการยอมรับเฉลี่ย 6.60, 6.40, 6.86, 6.36 และ 7.02 สำหรับสี กลิ่น รส เนื้อสัมผัส และความชอบโดยรวมตามลำดับ การศึกษาอัตราส่วนของน้ำใบย่านางต่อน้ำสลัดใสที่ได้คะแนนการยอมรับสูงที่สุด ใช้อัตราส่วนของน้ำใบย่านางที่ระดับร้อยละ 25 การทดสอบด้านจุลชีววิทยา พบว่าอยู่ในเกณฑ์มาตรฐานไม่เกินตามมาตรฐานผลิตภัณฑ์ชุมชน (น้ำสลัด)

คำสำคัญ: น้ำสลัด, ใบย่านาง, การยอมรับทางประสาทสัมผัส

Introduction

Nowadays, customers pay more attention to self-care and consume more nutritious food. Vegetable salads are a popular choice for health-conscious people. In addition, the number of business healthy food stores continues to grow (Sok, 2011). Vegetable-based salads are a low-calorie option. and has high nutritional value. However, the salad is devoid vitality. However, the salad dressing is the critical component that adds vitality to salads,

and each salad dressing has a unique combination of components. As a result, the energy received varies. Clear salad dressing satisfies the requirements of health-conscious individuals. Clear dressings are generally lower in salt and sugar. Additionally, transparent salad dressings are cholesterol-free. Although it includes vegetable fats, the vegetable fats utilized are monounsaturated and complex fats, both of which are considered to be healthy fats.

Tiliacora triandra is the scientific name for Yanang (ya-nang). It is a member of the MENISPERMACEAE family of plants. Yanang is a nutrient-dense herb. Especially high levels of beta-carotene, calcium, and iron. Additionally, Yanang includes significant amounts of phenolic compounds such as parahydroxybenzoic acid (p-hydroxybenzoic acid), which serves as a preservative (minecoside) Glycosides of flavones Cinnamaldehydes (flavones glycoside cinnamaldehydes) and monoepoxy beta-carotene (monoepoxy-betacarotene) The soluble and insoluble parts of Yanang extract had IC50 values of 499.24 and 772.63 mcg/ml, respectively, compared to vitamin C and vitamin E, which had IC50 values of 9.34 and 15.91 micrograms/ml, respectively. Yanang, in addition to containing such vital nutrients, has therapeutic qualities. Because Yanang is a cool-effecting herb. Thus, Yanang is utilized in traditional Thai medicine for fever, and heart illness (Samrueng, 2007) and leaves of the Yanang tree are the most popular portion.

Objective

1.To study the production process of clear salad dressing combined with Yanang leaves juice.

2.To study the concentration of Yanang leaf juice on clear dressing products combined with Yanang leaves juice.

3.To study the sensory quality of the clear salad dressing combined with Yanang leavesjuice.

4. To test the shelf-life of the salad dressing combined with Yanang leaves juiceextract.

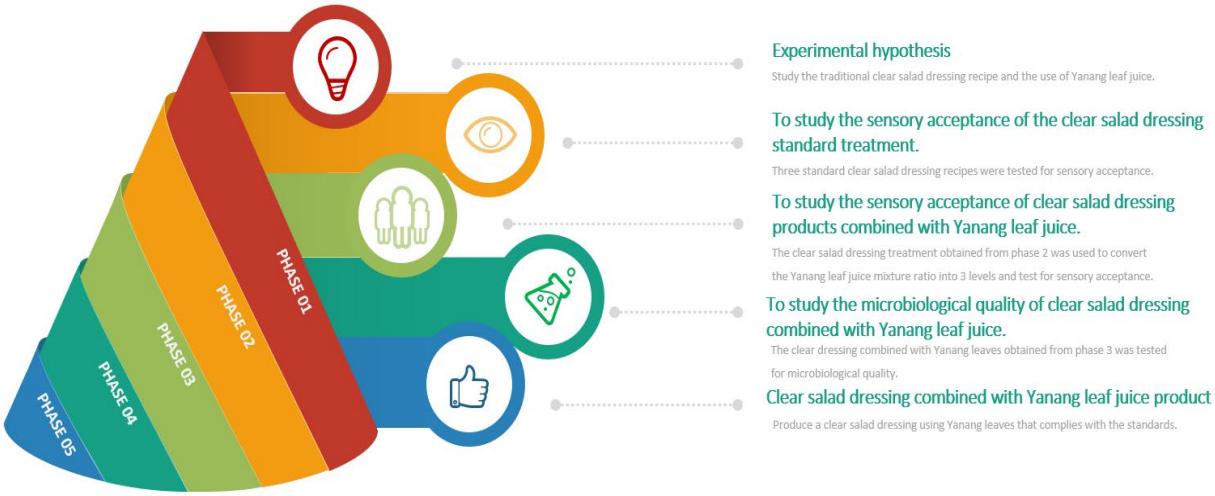
Scope of research

1. Select the basic recipe of the clear salad dressing that is suitable. The sensory test was carried out with 50 students at Suan Sunandha Rajabhat University.

2. To study the ratio properties of dressing mixed with Yanang leaves juice by changing the ratio to three levels, 15%, 20% and 25%. Then, the sensory acceptance test was carried out by 50 students at Suan Sunandha Rajabhat University.

3. Microbiological properties were studied by storing it at room temperature for 14 days.

Conceptual framework



Definition of operational terms/research terms

Clear salad dressing means products made from vinegar, flavorings such as sugar, salt, lemon juice. Mix well. May add salad oil, vegetable oil, and may add vegetables, fruits, herbs, spices such as pepper, garlic.

Yanang leaves are ivy plants that are native to central Southeast Asia, namely Thailand, Laos, Vietnam. Yanang leaves are oval green with a pointed tip, and small round vines are tough. can be found in every region of Thailand. It is very nutritious. The minerals that are beneficial to the human body in the Yanang plant include fiber, calcium, phosphorus, iron, niacin, protein, phosphorus and tannins. The group of vitamins contained in Yanang leaves include vitamin A, vitamin B1. Vitamin B2 and Vitamin C.

Acceptance of the Sensory Process is an analytical process, by using the tasters' senses: color, taste, aroma, texture, and overall. statistical techniques and interpret the findings appropriately.

Literature review

1.Yanang leaves

Yanang or Yanang leaves have a scientific name, *Tiliacora triandra* (Colebr.) It has an English name as Bamboo grass, in the north of Thailand called Choi Nang, in the central region called Tao Yanang, green vines, and in the southern part of Thailand is known as YaNang. It is a plant in the ivy family. Young branches are covered with downy hairs. When old, the skin is quite smooth. When the roots are large, a single leaf grows out next to the alternating trunk. Leaf shape: ovate or oval, oblong margin, apex tapered, base rounded, leaves 5-10 cm long, 2-4 cm wide, margin smooth, petiole 1 cm long. Flowers from the base of the petiole into a channel 2-5 cm long. One bouquet has 3-5 small yellow flowers. Flowers separate the sexes on different plants without petals. The fruit is small, oval in shape, green. When mature, the fruit becomes reddish yellow and turns black. Yanang is a cool plant. Which can help extinguish various hot poisons.

1.1 Medicinal properties of Yanang

Yanang leaves are the most useful and used in the treatment of diseases. Because it is a plant that has cool effects (Samrueng, 2007). and contains high amounts of antioxidants. In addition, it is classified in herbal textbooks as an elixir as well. According to the research report, it was found that Yanang leaves had properties to reduce inflammation (Panot et al.) and reduce blood sugar levels (Romgase and Wachiryah, 2017). respiratory system, reproductive system, and urinary tract infections.

2. Dressing

The dressing is seasoning or sauce that is added to salads. Salads can be delicious not only with fresh, quality salad dressings. "Salad dressings" are also the key to making salad dishes smell and taste even more delicious. The salad dressing also helps the salad to be full of nutrients. Olive oil in salad dressings is monounsaturated fat, which is a good fat for the body. Eggs contain complete protein. Fruits and herbs also have anti-inflammatory properties.

Dressing is a vegetable seasoning that is used to eat fresh. The dressing is divided into three types: mayonnaise dressing, French dressing, and salad dressing. French dressing and mayonnaise dressing contain a very high amount of vegetable oil as a component. It has a liquid or rather liquid appearance. Another type is low-oil dressing, a dressing that

mixes flour into it to make it thicker and stable. This type of dressing is sometimes called thickened dressing.

2.1 Mayonnaise dressing is a product from vegetable oil, vinegar or citric acid and eggs In addition, other substances such as salt, sugar, spices, etc. are added, the amount of oil is not less than 65% of the amount of mayonnaise dressing. It also puts 0.125 % of oxystearin.

2.2 French dressing is a liquid that may be layered or may stabilize. Contains a mixture of vegetable oil and citric acid. Containing vegetable oil as a component of not less than 35%, lemon juice or vinegar may be used no more than 25% of the total weight.

2.3 Salad dressing was produced as a substitute for mayonnaise dressing, but was later accepted as a type of dressing and can be used to cook dishes like mayonnaise dressing. (Narong and Anchanee, 1985) The main component of the dressing is salad oil. Other ingredients are flour and flavoring agents.

Research method / research methodology

1. Raw materials

- salt
- pepper
- lemon juice
- Bertolli extra virgin olive oil
- sugar
- water
- Yanang leaves

2. Equipment

2.1 Equipment for preparing a dressing salad with Yanang leaves

- mortar
- digital scale
- measuring cup
- muzzle
- colander

2.2 Equipment for determining the microbiological quality

- pH meter, model Lab 870, Schott brand
- tool kit and microbial analysis equipment

3. Chemicals

3.1 Chemicals for laboratory analysis

- Butterfield's phosphate buffer
- NaOH
- Alcohol 70%
- Alcohol 90%

3.2 Agar is used for analyzing total microbial count, *Escherichia coli.*, *Staphylococcus aureus.*, yeast and mold

- Plate count agar (PCA)
- Potato dextrose agar (PDA)
- Mannitol salt egg-yolk agar (MSEY agar)
- Peptone water
- Tartaric acid
- EC broth
- Levine EMB agar
- Lauryl sulfate tryptose broth (LST)

4. Experimental method

4.1 Investigate the traditional recipes for clear salad dressing using Yanang leaves.

This was research to determine an appropriate salad dressing recipes for experimenting with a clear dressing combined with Yanang leaves. Three salad dressing recipes were created:

Table 1: Standard recipe for salad dressing

Ingredients	Recipe 1 *	Recipe 2 **	Recipe 3 ***
pepper (g)	4	2	1
salt (g)	2	2	1
sugar (g)	4	4	8
olive oil (g)	21	42	10
lemon juice (g)	33	21	10

* Yaoapa & Nawara, 2008.

** Sirilak et al., 2007

*** Ankhana, 2016

Then, using the three clear dressings, determine which dressing has the greatest sensory quality and therefore the highest product acceptability score. The completely randomized design (CRD) experiment was designed using a one-way analysis of variance ($p<0.05$) and sensory quality was determined using a group of 50 sensory evaluations. To determine the concentration of Yanang leaves, a test is conducted against a clear dressing to see which one has the highest permissible score. Overall, aroma, texture, flavor, and personal preference.

Choose recipes from three reputable sources.

↓

Create salad dressings for each recipe.

↓

Evaluate the sensory quality of a standard salad dressing is evaluated.

4.2 Analyze the quantity of Yanang leaves juice contained in each clear dressing.

This experiment was designed to determine the concentration ratio of Yanang leaves to the amount of clear dressing using a complete randomized method (CRD) and one-way analysis of variance ($p > 0.05$) using Yanang leaves to freshwater at the ratio 2:15 and boiled the water. Then, using concentrated Yanang leaves juice in replacement of the ratio to clear dressings at three different levels: 15%, 20%, and 25% sensory quality were determined by a panel of 50 tasters. A test is used to determine the concentration of Yanang leaves juice in comparison to a clear dressing with the highest permitted result. How it appears in general, aroma, texture, flavor, and preference

Yanang leaves should be well washed and hung to dry.

↓

Yanang leaves must be cut into small pieces and thoroughly crushed.

↓

Combine yanang leaves with freshwater and filter out everything except the water. ratio 2:15

↓

Combine Yanang leaves juice with clear salad dressing in ratios of 15%, 20%, and 25%.

↓

Acceptance test for the sensory quality of salad dressing using Yanang leaves.

4.3 Analyse the shelf life of the transparent salad dressing containing yanang leaves juice that has been bottled.

It is an experiment to study the shelf life of clear dressing products mixed with yanang leaves juice derived from clause 4.2, then pasteurized at a temperature of 64 degrees Celsius for 30 minutes. The 400 ml bowling hard plastic bottle is packaged and then stored at room temperature at 30 degrees Celsius for 14 days according to the community product TISI (Thai Industrial Standards Institute, 2004)1 4 days and microbiological quality analysis as follows: total plate count (BAM, 2002), Staphylococcus aureus (BAM, 2002), Escherichia coli (E. coli) by MPN (BAM, 2002), yeast and fungus (BAM, 2002) compared to TISI (Thai Industrial Standards Institute, 2004)

Results and Discussion

1. The results of investigating the traditional recipe for clear salad dressing.

Three typical experiments were selected for this study: recipe 402 (Yaoapa and Nawara, 2008), recipe 515 (Sirilak et al., 2007), and recipe 617 (Angkana, 2016). to analyze sensory properties including color, aroma, taste, texture, and overall liking. 50 participants were used to choose standard treatments for clear salad dressing products accepted by the participants using a 9-point hedonic scale, with 1 indicating the most rejected and 9 indicating the most appreciated. a large proportion of them.

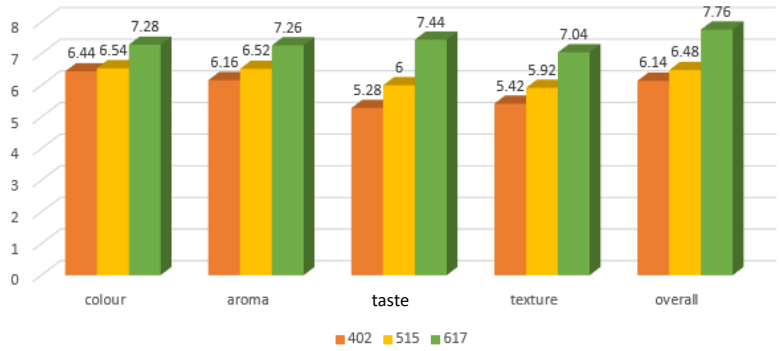


Figure 1: Sensory testing of the traditional recipe for clear salad dressing.

Table 2: Sensory testing of 3 recipes of clear salad dressing.

Sensory properties	Rating on the average		
	recipe 402	recipe 515	recipe 617
color	6.44±1.39^{b}	6.54±1.68^{b}	7.28±1.28^{a}
aroma	6.16±1.53^{b}	6.52±1.31^{b}	7.26±1.35^{a}
taste	5.28±1.82^{c}	6.0±1.86^{b}	7.44±1.54^{a}
texture	5.42±1.63^{b}	5.92±1.56^{b}	7.04±1.52^{a}
overall	6.14±1.43^{b}	6.48±1.54^{b}	7.76±1.25^{a}

note: the values with different superscript letters in a line are significantly different ($p<0.05$)., n=50

Color: From table 2 and figure 1 of sensory properties associated with colors. Consumers gave the recipe a score of 617, the recipe a score of 515, and the recipe a score of 402, with a color average of 7.28, next only to averages of 6.54 and 6.44. According to an analysis conducted using the SPSS statistics program, the recipe 617 is statistically significantly different from the other two recipes at a confidence level of 0.05% because the intensity of the dressing color is determined by the main ingredients, pepper and olive oil. which uses the same brand of pepper and olive oil but in different quantities. Resulting in different colors, with recipe 617 having the amount of darker and brighter colors than other recipes. due to the higher amount of spices and olive oil.

Aroma: From the table of sensory properties of aromas Consumers evaluated 617 samples as acceptable at 515 and 402, with an average aroma of 7.26, 6.52, and 6.16. There was a statistical difference in confidence levels of 0.05% because the aroma came from the primary ingredient: lime juice, which contained essential oils containing odorous chemicals such as flavonoids, d-limonene, linalool, terpineol, and olive oil. As a result, the taster assessed the level of sensory scores differently in each recipe.

Texture: It includes charts and figures showing sensory properties found on the touchline. Participants scored acceptance at 617, 515, and 402 in the experiment. The average texture qualities were 7.04, just slightly higher than the averages of 5.92 and 5.42. The recipe 617 got the highest acceptance score and was different from the other two in that it used varying quantities of lemon juice and olive oil, with lemon juice being a colloid solution of olive oil. They cannot be fully merged when mixed. As a consequence, tasters evaluated sensory ratings differently.

Taste: From the results of the taste acceptance test, it was found that the standard recipes that received the highest acceptance score was recipe 617, 515 and 412 with scores of 7.44, 6.0 and 5.28 respectively.

Overall: Consumers scored acceptance on tests at 617, 515, and 402, respectively, according to the overall preference sensory attributes table 2 and figure 1. The overall preference averages were 7.76, 6.48, and 6.14, respectively, indicating that all three experiments were performed, as determined by an analysis using the SPSS statistical program. There was a statistically significant difference of 0.05%, with the recipe 617 getting the highest acceptability score, as it had the optimal combination of components, resulting in the taster evaluating the sensory score level the most.

Consumers approved recipe 617 after conducting tests on clear salad dressing using three recipes (Angkana, 2016). As a result, the color properties were 7.28, the aroma properties were 7.26, and the taste properties were 7.28. 7.44 characteristics of the texture 7.04 Overall, there is a 7.76 percent preference. Lemon juice and olive oil provide the taste. Lemon, olive oil, and lemon juice had the greatest quality of the 3 recipes.

4.2 The result is Analyze the quantity of Yanang leaves juice contained in each clear salad dressing.

By combining Yanang leaves juice and water, three degrees of content substitution are available: treatment 468 (15 percent of content level), treatment 512 (20 percent of content level), and recipe 937 (25 percent of content level). Following that, the sensory quality, color, aroma, taste, texture, and overall preference of clear salad products were evaluated. 50 testers were used to select the research treatment of clear salad dressing combined with Yanang leaves juice that the scientific testers liked the greatest using a 9-point hedonic scale, with 1 indicating the most disliked and 9 indicating the most appreciated.

Table 3: Sensory ratings for a clear salad dressing combined with Yanang leaves juice.

Sensory properties	Rating on the average		
	Recipe 468	Recipe 512	Recipe 937
color ^{ns}	6.76±1.29	6.86±1.34	6.60±1.25
aroma ^{ns}	6.24±1.32	6.48±1.39	6.40±1.62
taste ^{ns}	6.30±1.53	6.72±1.43	6.86±1.76
texture ^{ns}	6.32±1.30	6.54±1.28	6.36±1.54
overall	6.70±1.25^{b}	6.88±1.32^{b}	7.02±1.36^{a}

note: the values with different superscript letters in a line are significantly different ($p<0.05$).

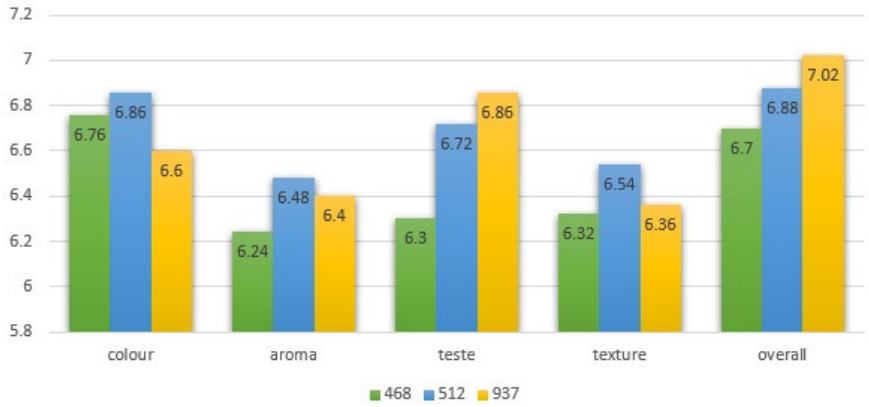


Figure 2: The results of the study on the degree of substitution of Yanang leaves juice to clear salad dressing.

Comparative sensory evaluation of clear salad dressing combined with Yanang leaves juice the following table summarizes the average sensory scores:

Color: From the color sensory attribute table that appears. Consumers rated treatments acceptances at 512, 468 and 937 with colors averages of 6.86, 6.76 and 6.60 respectively. There was no statistically significant difference at a certainty level of 0.05 percent, since the color appeared to be from the color that is the composition of the Yanang leaves, chlorophyll, and was characterized by a small amount of colloidal. As a consequence, tasters assessing sensory ratings appeared to do so in a similar way.

Smell: From the smell, consumers scored acceptance on treatments at 512, 937, and 468, with an average of 6.48, 6.40, and 6.24 for the smell. There wasn't a statistically significant difference at a 0.05 percent confidence level, since the smell was from the primary component: lemon, all 3 of which were experimental. There is a high concentration of lemon essential oil (volatile oil), which has a very complex chemical composition. Lemon essential oils were discovered to include over 34 compounds identical to those present in lemon juice, with citral being the most abundant (Philip R. Ashurst, 1999). As a consequence, sensory score levels evaluated by tasters were likely not statistically substantially different.

Taste: From the taste sensory attribute table, consumers rated treatment acceptances at 937, 512, and 468, with taste averages of 6.86, 6.72, and 6.30 respectively. There was no statistically significant difference at a certainty level of 0.05 %, since the Yanang leaves juice was tasteless, making it possible to obtain the flavor of the dressing, which contained the same amount of citric acid and sucrose in all experimental things. Lemonade and sugar are ingredients used to flavor many dishes to give them a unique flavor to the product, resulting in tasters assessing sensory score levels as unlikely to go differently.

Texture: From the sensory attribute table of texture characteristics. consumers rated recipes acceptances at 937, 512, and 468, with texture characteristic averages of 6.36, 6.54 and 6.36 respectively. There was a statistically significant difference at a confidence level of 0.05%, with the treatment of 617 receiving the most acceptance points. Everything experimented with contained amounts of lemon juice, yanang leaves juice and olive oil, of which lemon juice is a solution. Yanang leaves juice and olive oil are colloidal substances. When mixed, it cannot be fully combined. This results in a specific texture that does not

spoil the good nature of the dressing, resulting in the taster assessing the level of sensory scores likely to go no differently.

Overall: Consumers rated acceptance on treatments at 937, 512, and 468 points, with overall preference averages of 7.02, 6.88, and 6.70 scores, respectively, according to the overall preference sensory attribute figure and table 2. According to the SPSS statistics program, the 3 studies differed statistically significantly at a certainty level of 0.05 percent, with the 937 trials receiving the most acceptance points. A total of 937 trials were scored by sensory evaluation, by one trial accounting for a 25 % replacement of the quantity of yanang leaves juice in the final sensory score level.

3. Shelf life of the clear salad dressing containing Yanang leaves juice extract.

Microbiological analysis of clear dressing including Yanang leaves juice for total plate count, *Staphylococcus aureus*, *Salmonella spp.,* yeast and mold counts. Utilizing experiments from recipe 937.

Table 3: Microbiological examination for a clear salad dressing containing Yanang leaves juice extract (25%).

Test of microbiological	Result	Method
Total plate count	125 CFU/g	FDA BAM, online, 2001
S. aureus	Not Detected in 1 g	In house method based on ISO 6888-3 : 2003
Salmonella spp.	Not Detected in 25 g	ISO 6579 :2004
Yeast & Mold	15 CFU/g	FDA BAM, online, 2001

Microbiological quality analysis of clear dressing with Yanang leaves in clear plastic bottle packaging showed that the total viable count in the samples of clear dressing with Yanang leaves was equal to 1x102 CFU/g. *Staphylococcus aureus* was not detected in 1 g. of sample, *Salmonella spp.* was not detected in 25 g. and yeast and mold content was 15 CFU/g. From the results of microbiological analysis, it was found that it was within the TISI standard (Thai Industrial Standards Institute, 2004).

Discussion

The results of an investigation into the traditional recipe for clear salad dressing were: color, smell, taste, texture, and overall liking. From the test, it was found that the test subjects

accepted the test item 617 the most, with an average score of 7.28 for color, 7.26 for aroma, 7.44 for taste, 7.04 for texture and 7.76 for Overall rating.

Analyze the quantity of Yanang leaves juice contained in each clear salad dressing. Using a 9-point hedonic scale, the results were evaluated by 50 students at Suansunandha Rajabhat University. Recipe 937 received the highest score, with a substitution of 25% of Yanang leaves juice content.

The results of the analysis were the shelf life of the clear salad dressing containing Yanang leaves juice that has been bottled. showed that the storage of salad dressing in the package at room temperature was within the standard of community product safety on the TISI standard (Thai Industrial Standards Institute, 2004).

Recommendation/implication

The next study should study quality control of Yanang leaves salad dressing products at industrial level in terms of color ratio, viscosity as well as medicinal properties of Yanang leaves dressing. This can be developed into other products such as painkiller or blood sugar lowering agents. Because Yanang leaves have medicinal properties.

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