



Preparation and Study of Physicochemical Properties of New Vinegar and Herbs Flavor Powder

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Abstract

Most of the flavors depend on natural spices to add distinctive flavors, odor, and colors to snack foods, in addition to the many uses of spices in medicine fields, cosmetics, and perfumes. A group of six new food flavors was prepared from vinegar and herb flavor powder. The prepared flavors were based on vinegar liquid as a basic raw material for these flavors with a group of natural herbs as mint, thyme, rosemary, oregano, parsley, and dill. Some physicochemical properties of the prepared flavors were measured as moisture%, Ash %, pH, and total acidity %, in addition to the microbial test. The prepared products were of high quality regarding properties, taste, color, and flavor.

Keywords: Vinegar, Herbs and spices, Applications, Flavors, Snack food.

1. Introduction

The main component of vinegar is acetic acid or (ethanoic acid), whose concentration ranges for table vinegar from (4-8) % and up to (18) % for pickling purposes. Vinegar is used in detergents as a cleaning agent, in foods for marinades, salad dressings, mayonnaise, ketchup and as a food preservative by retards microbial growth[1-2]. It is one of the most popular products in the world; it is available in every country and in several different varieties, as example. In Spain country, It is produced in traditionally methods from grapes fruit by fermentation of (alcoholic and acetous)[3]. Vinegar is also used in health applications as an antioxidant, anti-obesity, antimicrobial, anti-hypertensive, cholesterol-lowering and immunostimulatory effects [4]. Recently, extensive research has been done for other active substances in various plants, for example antimicrobial agents and antioxidants have been used, and some successful commercial products have also been developed, as rosemary extracts. Natural antioxidants have been the main goal in studying aromatic plants in terms of the potential for expanding their use in the food industry [5]. In general, we can defined the flavor as a combination

of odor, taste, and mouthfeel, where the true tastes were represent the Sour, sweet, bitter and salty. Food sugar and other sweeteners contribute to give the taste of sweetness, while sodium chloride gives the taste of salt. Tamarind, tomatoes, vinegar and citric acid play an important role in giving the sour taste. Bitterness taste is given by coffee, cocoa, caramel and fenugreek [6]. Potato chips flavored with cheese and onions first appeared in Europe 40 to 45 years ago, as years earlier, potato chips were purchased with the familiar blue bag containing salt in each bag. When it comes to light foods with cheese, onions, salt, vinegar, ham, beef, and other ingredients, consumers now have a variety of options in addition to ready-made flavors [7]. The snack food industry is an important part of the global food industry, and it is primarily produced in Europe and the United States of America, with annual sales of \$ 374 billion, up nearly 2% year on year. The snack food industry is always changing, not just in terms of technology but also in terms of developing new and appealing products [8].

Nowadays, the majority of food flavors and fragrances are produced by chemical synthesis as artificial flavors or flavors that are naturally similar but are not environmentally friendly. Consumers often favor food that can be labeled as "normal,"

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according to recent market research. Because of this, many researchers and businesses have turned to create bio-stimulating flavors. [9-12].

Herbs and spices have long been used in food fortification as preservatives, flavoring agents, and medicinal agents. Despite the fact that herbs and spices are inexpensive, they have been valued as gold or jewelry for centuries. Ancient Egyptians used herbs and spices, and India and China have used them for centuries. Herbs and spices can now be used to improve nutrient absorption. The (WHO) survey indicated that 70-80% of the world population depend on modern medicine mainly on herbal sources for primary health care [13].

2. Experimental

2.1. Materials

Some ingredients (Concentrated white vinegar, salt, mint, thyme, rosemary, oregano, parsley and dill) were purchased from the local markets and some nutrition chemical materials as (Malic acid, Maltodextrin, dextrin and the preservative material) were purchased from Al-Motiebat street, Baghdad city, Iraq.

2.2. Methods

2.2.1. Preparation of flavors

At first, the concentrated vinegar powder was prepared using concentrated white vinegar and starch in percentage 1:1, then the mixture was dried by the electric oven for (4 hours). The concentrated vinegar powder was mixed with salt, dextrin, wheat flour, maltodextrin and malic acid. After homogenization the mix, the powder was mixed with 5% of (Mint,

thyme, rosemary, oregano, parsley and dill). In the last step, the preservation material was added to the mix in the percentage 2%, Table (1).

2.2.2. Moisture %

Moisture percentages were recorded by using two methods: oven (Temperature difference between wet and dry weight) and electric moisture meter.

2.2.3. Ash %

The ash content was measured by dividing the weight of ash content of the total sample weight by 100%.

2.2.4. pH test

The pH was measured by mixing (5 gm) of flavor powder with (50 ml) D. water.

2.2.5. Acidity test

5 ml of solution (5 gm. of the flavors with 50 ml of D. water) were titrated with Sodium hydroxide solution in the presence of Ph.Ph indicator. The acidity % was calculated from:

$$\text{Acidity \%} = \frac{V \text{ titrant} * M * 0.64}{V \text{ sample}} * 100\%$$

2.2.6. Microbial test

Antibacterial and Antifungal activity were tested by using Toda's method. The Agar were prepared using Muller Hinton Agar and Potato Dextrose Agar medium respectively. The activity was evaluated in vitro employing the filter paper disc method against two kinds of bacteria (*Staphylococcus aureus* as gram positive and *Escherichia coli* as gram negative) with two kinds of fungi (*Aspergillus flavus* and *Candida Albicans*). [14-16]

Table (1) Ingredients of the prepared flavors.

NO	Parameters	Salt	Salt	Salt	Salt	Salt	Salt
		& Mint	& Thyme	& Rosemary	& Parsley	& Oregano	& Dill
1	Vinegar powder	3%	3%	3%	3%	3%	3%
2	Malic acid	1%	1%	1%	1%	1%	1%
3	Salt	37%	37%	37%	37%	37%	37%
4	Wheat flour	25%	25%	25%	25%	25%	25%
5	Dextrin	10%	10%	10%	10%	10%	10%
6	Maltodextrin	15%	15%	15%	15%	15%	15%
7	SiO ₂	2%	2%	2%	2%	2%	2%
8	Palm oil	2%	2%	2%	2%	2%	2%
9	Mint	5%	0	0	0	0	0

10	Thyme	0	5%	0	0	0	0
11	Rosemary	0	0	5%	0	0	0
12	Oregano	0	0	0	5%	0	0
13	Parsley	0	0	0	0	5%	0
14	Dill	0	0	0	0	0	5%

3. Results and Discussion

The select of chips by consumers depends on the sense of taste, general appearance and healthy aspect. Most of the families forbid their children from eating different types of chips because some companies are adding some of industries enhancers that cause health problems for them. In this research, six new flavors were prepared using groups of natural herbs such as mint, thyme, rosemary, oregano, parsley and dill. The physicochemical properties of the prepared flavors were measured by practical methods as moisture%, Ash %, pH, total acidity and the microbial test as in the **Table (2)**.

According to the table (2). The moisture values ranged between (1.01%) to (1.08%) as good content for the flavors because the flavors recipe contains an anticaking agent (silicon dioxide) to absorb water moisture. The sample (salt & mint) gave the highest value of 1.08%.

Ash content is one of the important physical properties of food. This analysis is considered a traditional method of burning organic content leaving the inorganic content. This analysis helps us to know the inorganic content in the sample. The ash content was ranged between (1.02%) to (1.07%) as acceptable results for the flavors samples. The Ash content in the prepared products due to the presence of silicon oxide and herbal material residues [16-18].

The pH values were ranged from (4.3) in the sample (salt & mint) to (4.7) in the sample (salt & Parsley). Of course, the acidity is due to the acidic presence of the vinegar and malic acid in the flavor recipe.

The total acidity test of flavors was measured by titration methods, the acidity ranged between (14%) in the sample (salt & dill) to (15.9%) in the sample (salt & Parsley) [19].

The microbial activity was tested by using two kinds of bacteria (*Staphylococcus aureus* and

[7] Ainsworth P. and . Plunkett A, Manchester Metropolitan, Reducing Salt in Foods, UK ,2007, p. 297.

[8] Franco P, Pablo C, Mari'a S M, Potato Crisps and Snack Foods, Reference Module in Food Science, 2018, p. 1

Escherichia coli) with two kinds of fungi (*Aspergillus flavus* and *Candida Albicans*). The results were showed no contain the microorganisms.

4. Conclusions

This study involved the prepared six new flavors from vinegar & herbs powder and the study of physicochemical properties of the prepared flavors as moisture% , ash %, pH, and total acidity % , in addition to microbial test. Based on the results, seasoning, properties, taste and color, the prepared products were well nutritional flavors

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Conflicts of interest

There aren't any conflicts to report.

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NO	Parameters	Salt	Salt	Salt	Salt	Salt	Salt
		& Mint	& Thyme	& Rosemary	& Parsley	& Oregano	& Dill
1	Moisture %	1.08	1.04	1.01	1.06	1.042	1.02
2	Ash %	1.02	1.06	1.02	1.03	1.07	1.04
3	pH	4.3	4.5	4.5	4.7	4.42	4.34
4	Acidity%	15.5	15.1	14.5	15.9	15.3	14
5	Microbial test	0	0	0	0	0	0

Table (2) physiochemical properties and biological test of the prepared flavors