

## **The examination of microbial and sensory properties of traditional Iranian sweets**

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### **ABSTRACT**

*Different traditional sweets are produced worldwide depending on climatic conditions and people palates. The purpose of this study was to investigate the microbial and organoleptic characteristics of four types of traditional Iranian sweet and compare them with national standard of Iran. As the results showed that there are not any Coliforms, E. coli, and Enterobactericity in the samples and also the amounts of mold presented in the samples do not exceed of national standard. The results of this study showed that the technique has been used for the production of traditional Iranian sweets were perfect.*

**Keywords:** Traditional Iranian sweet, Microbial contamination, Organoleptic characteristics

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### **INTRODUCTION**

Nowadays, different sweets are made using different methods worldwide. Sweets consumption dates back to the beginning of sugar production from sugar beet and sugarcane. At that time just wealthy people could afford it because of low level of sugar production. Since 17 th century when sugar was industrially produced and its cost reduced, sweets consumption became popular among people. In the Middle East countries people's favorite sweets are those which contained a high level of syrup covered with nuts. In European countries, people prefer to eat sweets for breakfast and choose cakes covered with chocolate and fruits. In Southeast Asian countries, steamed sweets made of rice are popular. Different traditional sweets are produced in every country depending on climatic conditions and different palates. In the past different traditional Iranian sweets including Masqati, Rahatalholqum, sweets made of rice, roasted pea, and almond, as well as Hajbadam and Nanpanjereh sweets were common. Nowadays, different sweets are produced in all over the world. Strawberry, fruit and chocolate tarts as well as different cakes made in foreign countries are competing with Iranian sweets. Iranian sweets are classified into dry and wet. Dry sweets are those which produced without cream having long shelf life. Wet sweets contain cream and must be refrigerated. Traditional Iranian sweets commonly made as dry ones needing no refrigeration. However, considering the fact that these sweets contained milk and eggs and that they are produced manually which may lead to contamination and consequently food poisoning, they need to be examined with regard to microbial and fungal standards the objective of this study is to examine microbial contamination of some different traditional Iranian sweets including Paderazi, Kasmeh, Nanchae, Nanghandi, and Nanberenji and compare them with national standard of Iran.

### **MATERIALS AND METHODS**

Flour, sugar, eggs, etc. were purchased from local markets, Ghazvin, Iran. Different sweets including paderazi, Kasmeh, Nanchae, Nanghandi, Nanberenji were made following the recipes of kadbanoo Gole Gandom Company (Table1).

The methods of production are briefly presented here and the images of sweets mentioned above are shown in Figure 1.

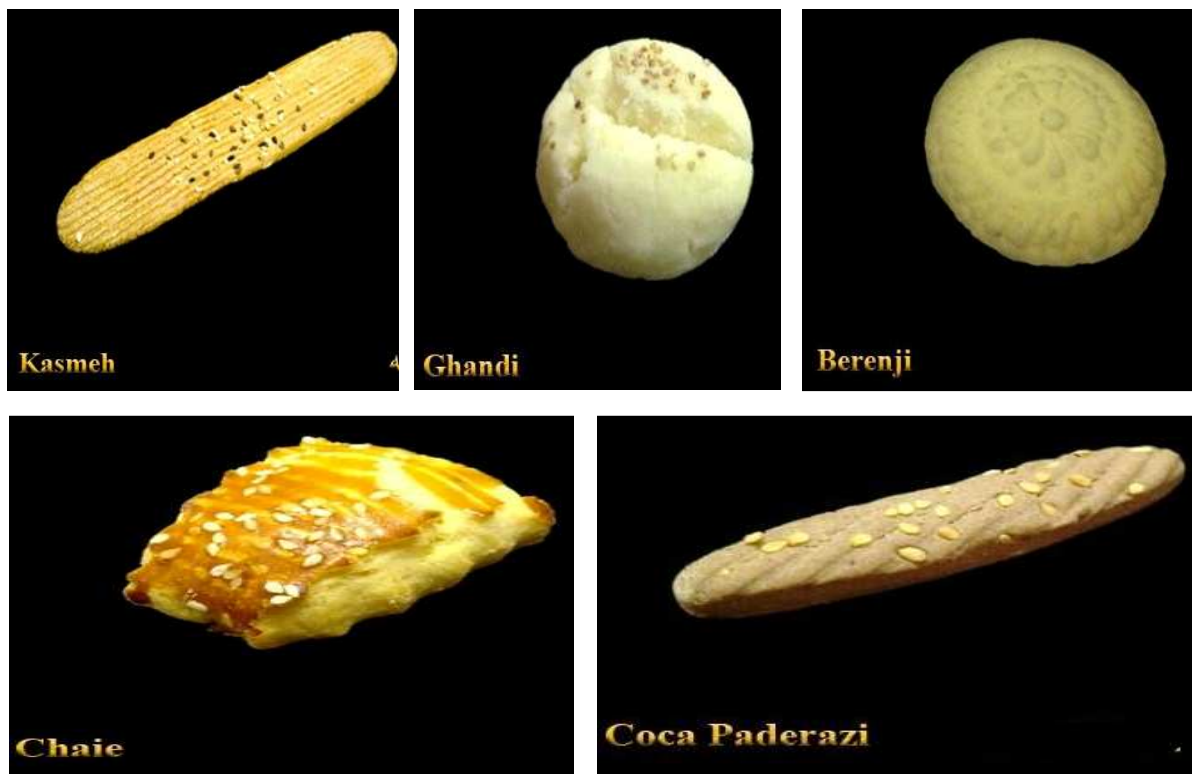


Figure 1: The image of sweets including Kasmeh, Nanghandi, Nanberenji, Nanchaee and paderazi

**Kasmeh:** the needed ingredients (shown in Table 1) were mixed to make the dough, then transferred to dough – spreading system, then molded and baked in the oven at 180 °C for 20 min.

**Nanghandi:** the ingredients presented in Table 1 were mixed, and then the obtained dough were refrigerated for 2-3h, rolled and molded. The molded dough was baked at 200 °C for 10 min. Also poppy seeds were washed and roasted, then applied over them.

**Nanberenji:** It is made in the same manner as kasmeh but with a specific mold, at 180 °C for 18 min. Although it is easily made, the quality of dough is of enormous importance, because if the dough is too thin or too thick, it is difficult to properly molded.

**Nanchaee:** Firstly, butter and sugar were mixed, then eggs, yogurt, and the remaining ingredients but flour were added, mixed thoroughly and finally flour was added and then baked at 220 °C for 8-10 min.

**Paderazi:** All ingredients given in Table 1 were mixed then the obtained dough was refrigerated for 3-4 h before spreading and molding. It was baked at 180 °C for 17 min. finally, sesames were applied over it sesames were heated before use because of their possible contaminations.

#### Microbial test

Microbial test, including mold and bacterium, was done according to International Iranian standard having following numbers:

Enterobactericity, No. 2461[1], Mold, No. 2-10899 [2], Coliform, No. 11166 [3], E.coli, No. 2946 [4]. Organoleptical tests were done according to international standard No.13965 [2].

## RESULTS AND DISCUSSION

#### Microbial test

The results of microbial test of the produced sample are given in Table 2. The sweets frequently show molding because of low content of moisture. Also the main toxigenic bacteria in the sweets are Enterobacteriaceae family

belonged ones, *coliformes*, and *E. coli*. Molding occurs in all foodstuffs because of their moisture and ambient temperature and this also happens for sweets. Mold is a kind of fungus being able to cause forty types of disease [5]. In order to survive, molds break down the materials contained in the sweet using their enzymes and acids resulting in produced toxins and food poisoning thereby they cause some physical changes in color and chemical ones such as sourness. They also may cause dangerous diseases depending on the type of fungus. According to national Iranian standard, the amount of mold in these sweets should not exceed 100/g sample. Thus, as shown in Table 2, all the samples meet the standard [6].

*E.coli* is a gram – negative bacillus belonging to Enterobacteriaceae family, commonly found with *coliforms* in the intestines of warm blooded creatures including humans causing infection, diarrhea and food poisoning. The presences of this bacterium indicate that food is contaminated with human or animal feces showing poor hygienic conditions. These microbes may cause different infections including blood and urinary ones as well as meningitis. Its food poisoning ranges from several hours to several days depending on the cause of poisoning [5]. As indicated in Table 2, these bacteria were not found in 100g of samples suggesting proper method of production. All of them, thus, meet the standard.

### Organoleptical test

The results of organoleptical test are presented in Table 3. Appearance and sensory properties of each sweet are different depending on the used ingredients. It is clear from the Table 3, that all the samples meet the standard.

Nanchae should be crisp and have a soft texture and golden color due to separated egg and sesames on it. It shows a cream color, solid texture and a desirable taste. Nanghandi also has a crisp texture but it must show some cracks to indicate good quality of its dough. As Table 3 shows, its texture is solid and brown. As Nanchae, beaten egg is spreading on kasmeh and sesames are applied over it, so its color should be light brown.

**Table 1- Ingredients of the studied sweets**

Sweet	Yogurt kg	Rose water g	Rice flour Kg	Egg No	Baking powder g	Vanilla g	Cardamom g	Butter g	Oil kg	Sugar kg	flour kg
Kasmeh	1	-	-	6	25	15	-	-	1.00	0.80	3.00
Nanghandi	-	-	-	-	45	-	-	-	4.50	6.00	9.00
Nanberenji	-	400	2.50	7	-	-	75	-	1.10	1.10	0.50
Paderazi	-	-	-	-	-	-	-	-	3.50	3.50	7.50
Nanchae	3	-	-	50	25	20	-	5400	-	2.00	6.00

**Table 2- Results of microbial test of the produced samples**

Microorganism	produced samples					Acceptable level <sup>1</sup>
	Nanghandi	Nanberenji	Kasmeh	Nanchae	Paderazi	
E.coli	Negative	Negative	Negative	Negative	Negative	Negative
Coliform	Negative	Negative	Negative	Negative	Negative	Negative
Entrobactericity	Negative	Negative	Negative	Negative	Negative	Negative
Mold	12	8	6	7	10	100

<sup>1</sup>:international standard

**Table 3- Organoleptic properties of the produced samples**

Paderazi	Texture	Color
Nanchae	Solid and crispy	White
Kasmeh	Solid	Cream
Nanberenji	Solid	Light brown
Nanghandi	Solid and soft	White
Paderazi	Solid and hard	Brown

## CONCLUSION

Traditional products of different countries reflect their own culture and conventions, however, modernization and growing consumption of fast foods results in decreased consumption of and sometimes abandoned traditional foods. Therefore, these foods need to be investigated, because they not only originate from conventions of every country but also provide high level of safety for the consumers since they are commonly produced without any additives and they may provide therapeutic properties as many natural foodstuffs approved by traditional medicine.

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**REFERENCES**

- [1] Institute of Standards and Industrial Research of Iran (ISIRI), **2003**.
- [2] Institute of Standards and Industrial Research of Iran (ISIRI), **2001**.
- [3] Institute of Standards and Industrial Research of Iran (ISIRI), **2002**.
- [4] Institute of Standards and Industrial Research of Iran (ISIRI), **1998**.
- [5] Institute of Standards and Industrial Research of Iran (ISIRI), **2000**.
- [6] Institute of Standards and Industrial Research of Iran (ISIRI), **1995**.