EUROPEAN ACADEMIC RESEARCH
Vol. IV, Issue 1/ April 2016

Impact Factor: 3.4546 (UIF)
DRJI Value: 5.9 (B+)

ISSN 2286-4822
www.euacademic.org

Organoleptic Indicators of the Honey Produced by Bees (*Apis Melliferal.*) in the Swarms in the Nakhchivan Autonomous Republic Condition

ELSEVER ASADOV
Nakhchivan State University
Nakhchivan Autonomous Republic, Azerbaijan

Abstract:

In these investigations there have been implemented organoleptic analyses of the samples of honey produced in different zones of the Nakhchivan Autonomous Republic. The organoleptic (smell, taste, view and form) analyses of the honey examples were implemented by the use of methods prepared by Bonvehi and Paujeola (1988) and Gonnet (1996). According to the results the total value was 11 points for the samples of honey produced in the Nakhchivan Autonomous Republic condition. According to these results the honey produced in the autonomous republic condition is included into the "good" category. The taste, smell, crystallizing and view of the honey produced in the Aras riverside plains and directed towards the highland zones is highly valued. So, in the Aras riverside plains the produced honey was valued 7,5 points (sufficient), in the mid-highlands it was 10.8 points (good) and in the upper highlands it was valued 14 points (excellent). While directing from the Aras riverside plains to the upper highlands the value of the honey gets higher. Its principal cause is the value of the organoleptic indicators of the honey which depends on the height of the territory. Majority of the nectar plants grow in the highland zones where much honey is produced and as a result the pollen influence to the quality (smell, taste, view, crystallizing, form) of the honey.

Key words: Honey, organoleptic, smell, color, taste

INTRODUCTION

There is difference between quality of the honey having different view and form according to the plant source, feature of production and consumption too. Defining the quality of the honey is not only according to the odd parameter, it is implemented with investigating of the some parameters. From this point of view, for defining of the physical and chemical features of honey, it is necessary to carry out microscopic, chemical and organoleptic analyses [1; 7].

Newly filtered honey is thick homogeneous liquid with specific taste and smell. Thickness of the honey depends on its structure. If the temperature increases, it causes diminishing of the thickness and the honey gets smoother [4; 10; 12].

If color variety of the honey shows variety according to the plant source, period and condition of to be kept, it is also connected with pollens of flower being in the shape of suspension. Color of the filtered honey shows variety as dark brown and even black. The light yellow color of the honey is the color of sunflowers, red is the color of chestnut trees, grey is the color of eucalyptus[9]. Flavonoid amount influences to the color of the honey. Usually if the flavonoid amount is much, then the honey will be of dark color[8].

All kinds of honey granulate and crystallize earlier or later in the condition of to be normally kept. According to the composition of the honey and condition to be kept the honey crystallizes. It happens in the result of occurring the crystals of glucose that change the amount, form, structure and quality. Honey becomes crystallized more quickly if the relation of sugar amount to the water amount is more [2].

During the carried out investigation there have been determined physical, chemical, floral and geographical features, organoleptic properties (taste, view, smell etc.) of the honey samples got from different zones of the Nakhchivan Autonomous Republic.

MATERIALS AND METHODS

Besides microscopic analyses, it is also necessary to do a few numbers of organoleptic analyses of honey. While doing view, taste smell, form analyses of honey there was used methods by Bonvehi and Panjeola (1988) and Gonnet (1996).

Samples of honey which should be used in the investigations have been got from 18 points of different natural-geographical zones of the Nakhchivan Autonomous Republic. Honey samples have been got from experienced bee-keepers who have been engaged with apiculture for a long time.

For investigating the honey by sense organs there have been elected board of judges of 3 people who have been engaged with apiculture for a long time. While electing the judges there should be taken account their experience of determining the plant source and composition of honey, technologies used while preparing honey extracts, treatment process of the honey and to be well-informed about conditions of honey depot. As well as the judges should have information of sense analyses, should know technology of explaining, should have experience of determining the honey by sense organs and their physiological position should not prevent the analyses process [5;11].

To carry out correct organoleptic analyses there should have been provided available environment conditions. While doing organoleptic analyses the room humidity should be approximately 60% and the room temperature should be about 20℃ and there have to be created suitable conditions for judges to implement analyses in the comfortable condition. By the judges samples were checked between 10-12 in the morning [5; 11].

While doing smell analyses a glass plate and a glass stick were taken. 30-40 grams of honey was put onto the plate, mixed and noted about the smell indifferent periods of time. The smell of the first, second, third times were noted [6;11].

While doing taste analyses the judges took a bit honey by a glass stick, put it onto their tongues and paid attention of the gradually melting process. Then they made notes. After taking each sample they took break for taking the other sample. The taste analyses of the honey samples were done this way [5;11].

At the result of all organoleptic analyses the information of each judge has been noted in the cardinal system points table. In this table the view, (homogenizes, cleanness and color), taste, smell, the sense of touch were valued separately [5]. The organoleptic valuing criteria of each honey sample has been taken 14 points and the maximum point is 16 (Table 1).

RESULTS AND DISCUSSION

Table 1. Valuing criteria of the organoleptic features of the honey samples

Marks	Valuing
1-7	Sufficient
8-12	Good
13-16	Excellent

There have been carried out organoleptic analyses of the honey samples produced in different zones of the Nakhchivan AR and their results have been analyses.

Table 2. Organoleptic features of honey produced in the Nahichivan Autonomous Republic condition.

No	Example	Valuing of the indicators				Total mark	Quality
		View	Taste	Smell	Crystallizing		
1.	Sadarak	1	2	2	3	8	Good
2.	Givrag	2	1	1	3	7	Sufficient
3.	Garachug	1	2	2	1	6	Sufficient
4.	Erezin	2	1	1	3	7	Sufficient
5.	Yayji	1	2	3	2	8	Good
6.	Kotam	2	3	2	2	9	Good
7.	Havush	4	3	4	3	14	Excellent
8.	A.Buzgov	3	3	3	2	11	Good
9.	Shahbuz	3	3	3	3	12	Good

10.	Alinja	3	3	3	2	11	Good
11.	Venend	3	3	2	2	10	Good
12.	Kilit	3	1	1	2	7	Sufficient
13.	Kuku	4	3	3	4	14	Excellent
14.	Bichenek	4	4	4	3	15	Excellent
15.	Kechily	3	3	4	3	13	Good
16.	Boyehmed	4	3	4	3	14	Excellent
17.	Khurs	3	4	3	3	13	Good
18.	Paragachay	3	4	4	4	15	Excellent

According to the view analyses, on valuing the honey produced in the autonomous republic condition there have been used marks from 1 to 4. By the evaluation of the judges the best honey is produced in Havush, Alinja, Kuku, Bichenek and Boyehmed villages. 2 samples of honey were taken from mid-highland (Havush, Alinja); 3 samples were taken from highland (Kuku, Bichenek, Boyehmed) zones. In general, view indicators of honey taken from Sadarak, Garachug and Yayji were valued as sufficient. These 3 points are in the Aras riverside plains.

Taste indicators of the 3 points (Bichenek, Khurs and Paragachay) were valued as excellent. In 3 points (Givrag, Erezin, Kilit) the indicators were valued by the lowest marks. The three points having higher indicators are situated in the highland zones. The points having lower indicators are situated in the Aras riverside plains.

The smell indicators of honey have been valued highly in 5 points (Havush, Bichenek, Kechily, Boyehmed and Paragachay). One of them is situated in the mid-highland and the other 4 are in the highland zones.

By the final organoleptic indicators the honey got from points of Kuku and Paragachay was valued highly according to the maximum crystallizing feature. Crystallizing indicator of the honey produced in one point (Garachug) has been considered insufficient. Both of the indicators valued excellently have concerned to the highland zones.

At the result the honey samples of different points were valued according to their organoleptic indicators. The 3 out of

18 samples have been valued only sufficient. These three points are Givrag, Garachug and Erezin villages and they are situated in the Aras riverside plains.

Organoleptic indicators of 10 samples were valued "good" according to the quality indicators. Organoleptic indicators of the honey samples of A. Buzgov, Shahbuz, Kechily, Alinja, Khurs were valued higher, but some low indicators don't allow them to get excellent marks.

The 5 samples out of 18 got "excellent" because of having the highest indicators. They are in the mid-highland (Havush) and highland (Kuku, Bichenek, Boyehmed, Paragachay) zones.

To come to such a conclusion, it is possible to say that, according to the indicators middle mark for the honey produced in the Nakhchivan Autonomous Republic condition is about 11 marks. This includes the honey produced in the autonomous republic condition into the "good" category. There has been registered that according to the organoleptic features (taste, smell, view, crystallizing) valuing of honey becomes higher beginning with the Aras riverside plains and directed towards the highland zones.

So, it is possible to value the honey of the Aras riverside plains by 7.5 marks (sufficient), of the mid-highland zones by 10.8 marks (good) and of the highland zonesby 14 marks (excellent) (Table 3).

Table 3. Middle mark of the organoleptic indicators of honey samples taken from different zones of the Nakhchivan AR

Zones	View	Taste	Smell	Crystallizing	Total point	Quality
Aras plain	1,3	1,8	1,8	2,3	7,5	Sufficient
Mid-highland	3,3	2,7	2,5	2,3	10,8	Good
Highland	3,5	3,5	3,7	3,3	14	Excellent

Such kind of valuing is connected with the flora of the territory. Such as beginning with the Aras riverside plains and directed towards the highlands the plants become richer in nectar.

Majority of the nectar plants in the highland and mid-highland zones influence the organoleptic indicators (view, taste, smell, crystallizing) of honey and as a result the honey produced in the mid-highland and highland zones is more qualified thanks to the majority of nectar plants in these zones.

REFERENCES

1. BALCI, F., Ankara'da Üretilen Ballarla Ankara Piyasasında Satılan Balların Fiziki Kimyevi ve Biyolojik Özellikleri Üzerinde Araştırmalar. Gıda-Tarım Hayvancılık Bakanlığı Mesleki Yayınlar Serisi, Ankara, (1978).
2. CAVİA M.M., FERNÁNDEZ-MUIŃO M.A., GÖMEZ-ALONSO E., MONTES-PÉREZ M.J., HUİDOBRO J.F., SANCHO M.T., Evolution of fructose and glucose in honey over one year, influence of induced granulation. FoodChem., 2002, 78, 157–161
3. D'ALBORE, G.R. , L' origine geographıque de la propolis, Apidologie, 10(3), 241- 267,(1979).
4. GÓMEZ-DÍAZ D., NAVAZA J.M., QUİNTÁNS-RİVEİRO L.C., Effect of water content upon the Galician honey viscosity. Electr. J. Environ. Agricult. FoodChem., 2005, 4, 949-955
5. GONNET, M., Judging the Quality of Honey by Sensory Analysis in Bee Products Properties, Applicatioris and Apitherapy, Edith by Avshalom Mizrahi, Yaacov Lensky, 247-251, (1996).
6. GONNET M., VACHE G. (1979) Technique de dégustationdesmiels et recherched'unsystème de notation et de classification objectif pour apprécier leur qualité par l'analyse sensorielle, 27th ApimondiaInt. Apic. Congr.,Athènes, pp. 499–506.

7. GONNET M., VACHE G. (1992) The taste of honey, Apimondia, Bucarest
8. KOLANKAYA, D.,Antioksidant Etki ve Bal, Mellifera, 1:1, 13-17, (2001).
9. KRELL, R, Value-Added Produdsfiom Beekeeping. FAO/v; Jr. Serv. Chapter 5, (1996).
10. MOSSEL B., BHANDARİ B., D'ARCY B., CAFFİN N., Use of an Arrhenius model to predict rheological behaviour in some Australian honeys. Lebens. Wiss. Technol., 2000, 33, 545–552.
11. SERRA BONVEHÍ J., GÓMEZ PAJUELO A. (1988) La calificación de miel es mediante el análisis organoléptico, Apiacta 23, 103–108.
12. YANNİOTİS S., SKALTSİ S., KARABURNİOTİ S., Effect of moisture content on the viscosity of honey at different temperatures. J. Food Engin., 2006, 72, 372-377