

Zsuzsanna Bene<sup>1</sup>, István Piskóti<sup>1</sup>

Received: 2017. April – Accepted: 2017. October

# *Assessment of orange wines in the light of new food consumption trends*

**Keywords:** orange wine, trends in winemaking, gastronomy

## 1. Summary

Studying the world's new gastronomic trends, the appearance of orange wines is a real rarity and a special phenomenon. In contrast with rosé wines, orange wines are made not from white grapes, but from blue grapes, by skin-contact fermentation. As a result, an orange color is obtained by the wine, and it also tastes different than usual white wines. Laypeople usually do not know how the preparation process looks like. Many people think that these wines are made from oranges via fermentation or orange peels are soaked in already finished wines. The objective of oenological and wine marketing research of orange wines, on the one hand, is to be able to make “product and process innovation” recommendations – in the absence of winemaking regulations – regarding the winemaking technology in question by collecting their characteristics and, on the other hand, to outline their wine gastronomy market possibilities, based on the assessment and evaluation of their current professional status and recognition, and to formulate the necessary directions for marketing support.

## 2. Introduction

The appearance of new trends and new guidelines is more and more characteristic of the world's winemaking today. A very important role is played by innovation, respecting the existence of traditions, the roots of grape producing and winemaking cultures. In our work, of these trends, the gastronomic rise of orange wines was selected, evoking a real „Coin perdu” world. It was investigated how, by collecting the characteristics of orange wines, these wines can be incorporated into the world of new trends in gastronomy.

White wine production technology consists essentially of the following processes: grape processing, must handling, pressing and fermentation. The harvested grapes are poured into the receiving hopper. From this, they go to the crushing-destemming machine, where the grapes are separated from the stems, and then crushed. Before pressing, the must of fragrant varieties is kept on the skins in the cold for a few hours, so that flavor and aroma components in

the cells of the skins are better released as a result of the effect of the acids in the must. Before cooling, further must treatments are applied, particularly the addition of sulfur dioxide, or, possibly, the addition of ascorbic acid (a reducing agent), or various pectin decomposing preparations, enhancing the efficiency of pressing. Must soaking is usually carried out at a temperature around 5°C, for a few hours. During this, the risk of oxidation of the must (flavor and aroma components) is increased, since gases are absorbed by liquids to a larger extent at low temperatures. Dehydrated must is transferred to the press, where total (or optimal, from a finished product point of view) extraction of the juice is performed. The juice extracted is collected in a fermentation tank or a barrel, where the process of fermentation takes place. In case of a decreased fermentation intensity, or the evolution of unpleasant smells or tastes it is necessary to add yeast nutrients or introduce oxygen (ventilation). Care must be taken to remove the evolving CO<sub>2</sub> continuously. Recently, in order to stress local, unique nature, wines are prepared by artisan winemakers by spontaneous fermentation, using the natural yeast

<sup>1</sup> University of Miskolc, Faculty of Economics, Institute of Marketing and Tourism

flora. In this case, the risk of unsuccessful fermentation is greater.

The main difference between white and red wine making technologies is that red wines are fermented from the must, together with the grape skins, so they are only pressed when the fermentation is over. Sulfur dioxide is also added to red must, and it is also treated with protective colloids, promoting the extraction and stabilization of coloring substances. When preparing fragrant, fruity red wines, the must is soaked cold: at approximately 5°C for 4 to 6 days. In other cases, pure yeast is added to the must immediately.

In the case of orange wines, the normal white wine making procedure is not followed, since there is no soaking on the skins, but fermentation on the skins, as in the case of red wines. An important difference is the grape varieties used, since it is not blue grapes, but white wine grapes that are processed, no sulfur dioxide is added to the must and it is not treated, the objective is not the release of dyes and tannins from under the skin, but the release of polyphenol-type compounds from the pulp, the skin and the seed, enriching the basically white wines with special colors and flavors.

Orange wine producers attribute the development of the peculiar aroma to the special fermentation vessels. This could be a specially designed amphora, a so-called concrete egg or a spin barrel. At the end of the fermentation process, the must is completely dry or semi-dry, it is pressed and then returned to the fermentation vessel for maturation.

There are various ideas and technologies regarding the implementation of the procedure, there are no specifications or legal regulations for orange wines.

### 3. Literature review and analytical methodology

#### 3.1. History of making orange wine

According to our present knowledge, the cradle of the wine culture of the world is located in the South Caucasus, in the area of present day Georgia.

The assumption that wine began its conquest of the world from Georgia approximately 8,000 years ago is supported by countless archaeological finds in the area. In Georgia, seeds have been found which seem to be the seeds of cultivated grapes (their shape differs from those of wild grape seeds), and can be dated around 6,000 BC [1]. It had already been discovered by this time by the ancient people of the South Caucasus that wild grape juice turned into wine through a mysterious transformation, if it was left in clay pots completely buried below ground, in so-called qvevris. Qvevris are special vessels for winemaking, impregnated with beeswax, which were completely buried below ground to ensure a constant

low temperature for fermentation. The volume of the qvevris ranges from 2 to 3 liters to 6 to 8 thousand liters, but 10 to 15 thousand-liter qvevris have also been made (Figure 1). Various phases of production and retailing have been developed for thousands of years, to this very day. In the South Caucasus, the role of the qvevri in winemaking is as important as ever [2].

In 2013, the qvevri technology was inscribed on the UNESCO Representative List of the Intangible Cultural Heritage of Humanity. Many Georgian families hold on to their rich winemaking culture. There is a special small building next to their home, the “Mara-ni”, where qvevris of different size are buried (Figure 2). Qvevris have a cultic significance: when a male child is born in the family, a qvevri is buried for him, and it is opened only on his wedding day, so that the conserved wine can be consumed by the family at the feast [4].

#### 3.2. The wine tradition of Georgia

Georgia is located in Eastern Europe, on the Eastern coast of the Black Sea. Its climate is diverse, forming a transition between humid subtropical and continental climates. It is characterized by sunny, but not scorching summers and mild, frost-free winters. Annual rainfall is 400 to 1600 mm. As a result of the Black Sea, humid air masses come to the vineyards and the Greater Caucasus protects them against cold air coming from the north, while providing clean water for the vineyards in the valleys.

The largest wine region, accounting for 70% of all the vineyards in Georgia, is Kakheti, the center of which is Telavi. Wine produced here also accounts for 70% of the total wine production of the country. In Georgia, there are 521 autochthon *Vitis vinifera* grape varieties and 21 types of wine. In the area of cultivation, soil composition is varied, alluvial clay soil, limestone clay and sandy soils on limestone subsoil can all be found, and the typical soil type of Kakheti is the so-called cinnamonic soil, a clay soil rich in humus, iron and cinnamic acid.

Among the grapes cultivated, world-wide varieties such as Cabernet franc or Cabernet sauvignon appear in ever growing areas. The typical wine type of Kakheti is a white blend of the Rkatsiteli and Mtsvane varieties.

Grapes were pressed in a so-called “sacnakheli”. The sacnakheli is a long bathtub carved from a log, preferably of linden, but it could be made of clay or a block of stone, e.g., limestone. There is a hole in the sacnakheli, through which wine leaves. Before pressing, a “chelti”, a screen made of wood was placed at the bottom, grass was sprinkled over it, and the fruit was layered on top of this. Grapes were tread upon, and as a result, its juice flowed through the chelti and into the qvevri. The resulting must can be divided ar-

bitrarily into three fractions: the first fraction is a turbid liquid, the second one is a lighter, full-bodied solution, and the third one is a strongly oxidized brown liquid rich in tannins.

Fermentation of the grape juice took place in the qvevri [5]. Nowadays, Georgian winemaking is once again thriving. The possibility of the renewal of the wine sector is seen by many Georgian experts in the return to the roots. Making „amphora wine” thus is not only part of Georgian nostalgia, but also a conscious strategy in order to conquer the international wine market.

### **3.3. The effect of the phenolic compounds of grapes on wine during skin-contact fermentation**

From a winemaking point of view, phenolic compounds are among the most important group of compounds. On the one hand, they are responsible for the oxidation of wines, and on the other hand, their presence is essential for developing the character of the wine. Several polyphenol compounds have a physiological significance as well. Their health-protective effect is due to their antioxidant activity, among other things [6]. During skin-contact fermentation, wines rich in tannins are made, with a high content of natural antioxidants, and so it is possible to prevent “aging” processes without additives in the case of orange wines.

Flavonoid phenols from grapes are responsible for the bitterness and astringency of wines, as well as for their tendency to turn brown. The reason for the large number of basic compounds is the various numbers and positions of the hydroxyl groups on the rings, as well as the occurrence of flavonoids in a glycosidic form. In the latter compounds, the hydrogen of the hydroxyl groups on carbon 3, 5 or 7 of the aglycone is replaced by a sugar or an acylated sugar. Flavonoid phenols possess both reducing and antioxidant effects, and they are prone to polymerization. From a physiological point of view, their beneficial effects on the permeability and fragility of vessel walls can be highlighted. Grapes are particularly rich in phenolic compounds (**Figure 3.**) [7]. They play an important role in the prevention of cardiovascular diseases. In terms of wine chemistry, they influence sensory properties and play a role in vitamin P activity. Leucoanthocyanidin and its condensation products, the tannoids form the bulk of oenotannin, the tanning substance of wine. Depending on the degree of polymerization, they influence the sensory properties of wine with their astringency. Leucoanthocyanidins that form from leucoanthocyanins exhibit an antioxidant effect in wine. Procyanidins (**Figure 6.**), belonging to non-hydrolyzable tannins, are responsible for wine stability, and for the development of color and flavor sensation. Precursors of the procyanidins, catechol monomers (**Figure 4.**) mainly determine color intensity and color tone, and responsible for the color deepening due to oxidation. They play

an important role in the clarity and stability of wine, and can also cause the tart, astringent taste. They are found in different qualities and quantities in the various parts of the grape plane. Procyanidins and catechols, important from a winemaking point of view, occur in the skin, the seeds and the stem, while the largest concentrations of simple phenols (caffeic acid, p-coumaric acid, ferulic acid, etc.) are found in the pulp (**Figure 5.**). The phenol composition of wines is primarily dependent on the grape processing and winemaking technologies applied. The phenolic compounds of grapes have significant physiological effects. In addition to their bactericidal and vitamin P effects, their beneficial effects on the cardiovascular system should be stressed.

The orange tint of the wines is caused by polyphenolic compounds (primarily procyanidins), with the color intensity and color tone depending on the grape variety and the duration of skin-contact fermentation [8].

### **4. Assessment of orange wines in the light of new food consumption trends**

In the food market, several different consumer behavior models can be distinguished. The research first conducted by Pilgrim and Peryam is considered a special area. They considered the starting point of their model to be human perception, determining the absorption and evaluation of the physical properties, sensory characteristics and external factors of the food and, ultimately, the food choice and consumption based on these [9].

The work of Grunert on food-related lifestyle was published in 1996. The starting point of this is that to develop the appropriate marketing strategy, it needs to be assessed within what kind of limits does a consumer perceive the value of foods. To do so, we have to understand how the given product and the self-relevant consequence produced by it are connected in the consumer’s consciousness. In light of all this, the food-related lifestyle model combined all those consumer and purchasing characteristics that show how the value obtainable by acquiring the given food is understood by the customer [10].

Regarding food-related megatrends, one of the most important buzzwords of today was considered “health” by Töröcsik, the need for healthiness during food purchases is becoming more and more important. Consumption of food that complies with this trend is nowadays generating social recognition [11]. Another megatrend affecting today’s food choice is the emergence of morality, i.e., environmental awareness and sustainability [12]. Also an important trend is the use of the so-called „clean label” (**Figure 8**), which means that no additives were used for the manufacturing of the product and they contain natural ingredients – through different enzymatic technologies – which are free of additives and preservatives designated by E-numbers.

According to the Mintel British market research firm, the global food consumption trends in 2017 are as follows [14]:

1. Trust in tradition: consumers look for modernized versions of traditional products, in terms of composition, flavor and format;
2. Rise of plants: the increase in popularity of more natural, simple and more flexible diets further enhances the spreading of vegetarian, vegan (strictly vegetarian) and other plant-based formulas;
3. Reduction of food waste;
4. Reduction of the time spent on food and meal production; the time required for production is similar in importance to the nutritional value and the ingredients;
5. Providing for workers on the evening shift: a new market for freshly-prepared foods with a function, intended to be consumed at this time of the day;
6. „What does the balance show” – „Health for everyone”: foods that support a healthy lifestyle are no longer considered luxury products.

Regarding consumer behavior, in the case of wines it can be said that megatrends in the food market can also be observed in the wine market [15]. Dominant groups of consumers have turned away from mass wines and are looking for products with higher added value [16]. In the case of wines, natural origin, excellent taste and flavor, and special appearance are demanded as well. The ecological footprint, in the context of ever-increasing environmental awareness, is a value used in the regulation of resource utilization and social engineering. It expresses, at a given degree of technological development, how much land and water is required by human society to sustain itself and to dispose of, or possibly reuse, the waste generated during manufacturing processes [17]. The term “ecological footprint” was coined by the Canadian ecologists William Rees and Mathis Wackernagel. The ecological footprint value can also be calculated for foods. With their work, by identifying relative consumption, the authors try to induce consumers to use resources more economically and to change their resource-wasting habits, typical of consumer societies [18]. Environmental awareness is also important in winemaking from the producer side, since today one can obtain financial support more easily for ecologically efficient (i.e., with a green approach, resource-efficient, low emission) production methods. An eco-friendly consumer who, with his or her behavior and consumption, turns towards products manufactured using eco-efficient procedures, is an important player in production and commercial systems [19].

Orange wines meet the above described trends and value requirements. Grape raw materials come from organic farming, the technology and spirit of wine-making go back to tradition, the use of sulfur is minimal in the case of wines and no chemical stabilizers are used for the preservation of the products. The finished product is marketed in elegant bottles with glass stoppers, indicating high quality. Orange wines are small ecological footprint products, as most of them come from the vineyards of winemakers who perform organic farming, and usually reach the consumers’ tables as unfiltered, untreated products. No polluting byproducts are produced during the winemaking process. All these could be important elements of the favorable market positioning of orange wines.

## 5. Materials and methods

During our preliminary research, we sought to gather information characteristic of orange wines, and to determine who uses this technology in Hungary. It was investigated how these wines fit into Hungarian gastronomy, and what role they could play in the catering industry. In our survey, descriptive research methods were selected: interviews and a sensory descriptive method.

### 5.1. Questioning methods: structured data collection and in-depth interviews

During our structured data collection among winemakers, an information sheet with the following questions was compiled:

1. Occupation of respondent;
2. In which wine region of the country do they work?
3. When did they first hear about the orange wine making process?
4. When did they first make orange wine?
5. Which grape variety is used for the production?
6. What kind of vessel was used for the skin-contact fermentation?
7. What was the duration of skin-contact fermentation?
8. What chemical and physical stabilization procedures were used?
9. Do they have their own commercial orange wine lot?
10. What kind of sales channel was chosen for the marketing of the wine?
11. Do they think that these wines have a place in Hungarian gastronomy?

12. What are the characteristics of these wines, what are the distinctive features?
13. Are there differences compared to other manufacturing processes?
14. With which foods do you think orange wines go well?

Tamás Illés, marketing and sales head of the Abbey Winery Pannonhalma was chosen as the subject of our expert in-depth interview, because, in our opinion, he has extensive knowledge in the field of gastronomy and has an insight into the orange wine market. As the marketing and sales head of the Viator Restaurant in Pannonhalma, Tamás Illés represents the winemaking side on the one hand, and on the other hand, as a catering expert, he is present at the meeting of wines and foods.

### 5.2. Sensory descriptive test: Profile analysis – Wine aroma profile test

This method is one of the most complex descriptive sensory methods. Realization of the characteristics determined during data collection were analyzed for 10 wine samples using 9 judges, selecting 8 criteria.

## 6. Results

It was mapped out which winemakers produce orange wine in each wine region. Our questionnaires were completed by 12 winemakers. One of the respondents was a head of marketing and sales, while the others were winemakers. Four of the latter were looking for a new style of winemaking, some of them had met the technology of orange wine during their studies, while five people indicated “other” as their response to question 3 of the questionnaire. At the beginning of our survey, we thought that orange wine first appeared in Hungarian gastronomy in 2016, so it had been first made probably in 2015. This assumption was confirmed by the answers given in the questionnaires.

The following varieties were used by winemakers for the preparation of orange wines: Hárslevelű, Cserszegi fűszeres (spicy), Szürkebarát (Pinot gris), Chardonnay, Pinot blanc, Zenit, Olaszrizling (Welschriesling), Furmint, Zöldvelteleni (Grüner veltliner), Müller Thurgau, Piros bakator, Tramini (Gewürztraminer), Juhfark (Lammerschwanz).

For fermentation, amphorae were used by two winemakers, while others used spin barrels, the so-called concrete egg or stainless steel containers. Skin-contact fermentation is carried out for 2 to 4 weeks by most of the respondents. A 6 week fermentation time was reported in one case only. In terms of chemical and physical stabilization procedures, minimal sulfuric acid treatment was applied by all winemakers, and the wines are mostly bottled unfiltered. Of the winemakers completing the questionnaire, two of them had no commercial orange wine lots.

In terms of sales channels, local tasting and selling at catering establishments are typical. In the latter case, wine sales networks play an important role. According to the replies to the questionnaires, chain store marketing is not performed. We assume that the cause of this is the small number of lots, and the uniqueness of the wines. It was confirmed by all respondents that orange wines have a place in Hungarian gastronomy.

The most important features, as positioning factors:

- Naturalness,
- Orange color and sensory characteristics (orange peel, vanilla, roasted seeds, peanuts),
- Rethinking of winemaking tradition and low sulfur levels.

Several options were indicated by the respondents in terms of food recommendations (Question 14). In their opinion, orange wines can be matched with a wide variety of foods:

- chicken breast filled with dried fruits on a bed of grilled vegetables, fish;
- coffee-flavored desserts;
- foods for which lower tannin content red wines are recommended;
- in a Tokaji wine environment, it can be used as an alternative to red wine in a menu, for rich meat-based soups, duck and lamb;
- foods with little char material, mild caramelization, possibly with not too dominant exotic seasoning, salads and light vegetable dishes (possibly grilled).

For the preparation of the profile analysis of orange wines, 10 wine samples were collected from several wine regions:

1. Cserszegi fűszeres (Bükk wine region);
2. Tramini (Balaton Uplands);
3. Pinot gris (Mátra wine region);
4. Furmint (Mátra wine region);
5. Olaszrizling (Mátra wine region);
6. Szürkebarát (Eger wine region);
7. Hárslevelű (Tokaj wine region);
8. Furmint (Tokaj wine region);
9. Zenit (Sopron wine region);
10. Zöld velteleni (Austrian wine fermented in amphora).

Realization of the characteristics determined during data collection were analyzed using 9 judges, selecting 8 criteria. Judges were selected to include 2 orange wine makers, 2 winemakers, 2 college students taking oenology courses, 2 wine merchants and 1 person from the Tarczal Research Institute for Viticulture and Oenology.

Comparison of orange wines according to the different properties is shown in **Figure 9**.

During wine profile analysis, we did not focus on the differences between the wines, but on examining the uniqueness of the individual properties, although there were obvious differences between the different basic wine types. The appearance and color intensity of the wines were important properties for all judges. Even with minimal use of sulfur and without physico-chemical stabilization procedures, sparkling, non-“orange” colors befitting of white wines were encountered, with fabulous spicy fragrances. The character of the wines was determined by the high alcohol content, giving them a beautiful body and complexity. The expected tannic acid and acidic character was not prevalent in the wines and, contrary to our expectations, it was not the signs of roasted peanuts, walnuts, coffee and chocolate that appeared. Our studies showed that the roasted peanut, tannic acid and acidic characters were not important for any of the wines, unlike full-bodiedness, color intensity, complexity and spicy fragrance. The results obtained, which partly contradict the opinions of the winemakers, encourage the further investigation of orange wine characteristics and manufacturing technologies.

As a result of the in-depth interview, exploring also expert and market-sales aspects, the following statements can be highlighted:

- The development of large-scale food production makes continuous supply and convenient purchases possible for the consumer, but it presents a number of hazards to the environment. At the same time, production must be controlled with the principle of sustainability in mind.
- When choosing foods, products that are manufactured with the smallest possible interference and greatest possible naturalness are preferred by a small, but growing part of consumers.
- In winemaking, production without interventions is burdened with many financial uncertainties, however, the consumption of orange wines may appeal to those who would like to pour the most natural “imprint” of the grapes from the bottle into the glass.
- Biological or even biodynamic viticulture and wine production cannot yet be called a definite trend, but its presence can be perceived clearly

on the domestic wine market, justifying the existence of orange wine production.

- Sustainability-based thinking is more and more prevalent in gastronomy as well, materializing in promoting backyard farming, in local or regional approaches, in shortening shipping routes, and in searching for and using high quality raw materials. Orange wines are also prepared with these principles in mind. Food-wine matching of orange wines is formulated in the literature in the broadest possible spectrum, depending on the vintage, the grape variety, the terroir and the processing tools. Essentially, orange wines can be recommended to a combination of foods starting from seafood, through sea and freshwater fish, as well as white and red meat, to wild game dishes. In our experience, orange wine provides an outstanding culinary delight with dishes prepared with ripe mediterranean or exotic fruits, other dried fruits, oilseeds and herbal-spicy notes.

Our orange wines are marketed at the end of May and, due to their small amounts, they are out of stock within a few months, so their appearance in gastronomy can be expected seasonally, among our summer dishes. Unique wines, such as orange wines are usually welcome by wine consumers, they even look for them. It can be assumed that at least some of the consumers are interested in orange wine because of its naturalness and uniqueness.

- It is difficult to formulate a specific orange wine recommendation for positioning in fine-dining, the appropriate counterpart of the specific orange wine can be found, considering the vintage, the grape variety, the terroir and the processing tools, by trial and error and sensory testing, and the result can be any dish from an appetizer to a dessert.
- Based on our research, we believe that orange wine may also arouse the interest of a critically-minded, solvent consumer base in other wines of a given winery.

## 7. Conclusions and recommendations

Orange wine making is based on ancient traditions, but it may represent a new bright spot in the range of winemaking technologies. Looking at the characteristics and the values of these wines, the following can be said:

1. The manufacturing culture and tradition is based on thousands of years of tradition.
2. During the production of orange wine, an essential aspect is preserving its naturalness, winemakers strive to use no more than a small amount of sulfur in the technology, and the use of physical and chemical stabilizing agents is kept to a minimum, or eliminated completely.

3. Producers usually conduct organic farming.
4. They are prepared by skin-contact fermentation of white grape varieties.
5. Their appearance is characterized by darker color tones, ranging from orange through salmon to dark amber colors.
6. Filtered reflective appearance is not a requirement, there could be unfiltered lots because of the stabilization treatments, and these could be slightly opaque.
7. In terms of scent, they can be very diverse, due to their spiciness they can include wines with notes of quince, orange, citrus, roasted peanuts, wood, chocolate or coffee.
8. Based on their sugar content, they are usually dry, more rarely semi-dry or semi-sweet wines.
9. Most of them have an alcohol content higher than the normal 12 v/v%.
10. The total polyphenol content of orange wines is higher than that of white wines. Unfortunately, no literature references have been found comparing the chemical compositions of orange wines and red wines. Accordingly, it can only be assumed that orange wines can be included among foods with beneficial health effects due to their tannin content. Their unusually high price often exceeds the price of noble-sweet dessert wines.

### 8. Summary

Over the last year, skin-contact fermented white wines, the so-called orange wines, have attracted international attention in the wine sector. During our work, we mapped out whether such wines are made in Hungary, and if so, then by whom. During our research, an increase in the consumption of orange wines was observed in international gastronomy.

Overall, it can be concluded that we possess many prejudices regarding the skin-contact fermentation procedure of white wines. The “general public”, as represented by lay consumers, does not know the manufacturing procedure of orange wine. As was mentioned earlier, any people think that these wines are prepared from oranges via fermentation, or orange peels are soaked in finished wines. The minimal use of wine treatment procedures can lead to further misunderstandings, as it is commonly believed that no high quality wine can be produced by the method of orange wine production. Followers of today’s modern gastronomic trends consider it an essential aspect to subject the consumer to a multisensory experience in catering, and this can be ensured by the creation of new flavors and flavor combinations. The appearance of orange wine already aroused interest with its name and color. Based on the name, consumers think of mediterranean fruits and mediter-

anean life. We consider it an important task to make sure that the interest in orange wines does not become a short-term fad. To achieve this, trust in the product has to be strengthened. An important tool for this is to find the place of this wine in food culture by gastronomists and sommeliers. It needs to be determined, how orange wines can be fitted into the different menus, so that, by the appropriate matching, an unforgettable experience can be provided to consumers. In our work, the initial steps have been taken towards this goal. It was clarified what the concept of orange wine means. It was demonstrated how, through its characteristics, it fits into new eating trends. A few orange wine making Hungarian winemakers were sought out, a survey was conducted of the gastronomic and economic situation of this type of wine. It was found that mainly catering businesses can be used as marketing opportunities.

### 9. References

- [1] Phillips, R. (2001): *A Short History of Wine*, Allen Lane, London
- [2] <http://www.kvevri.org/hu/> (Acquired: 18.01.2017.)
- [3] <http://www.unesco.org/culture/ich/en/RL/ancient-georgian-traditional-qvevri-wine-making-method-00870> (Acquired: 18.01.2017.)
- [4] <http://www.boraszportal.hu/borvilag/uj-ra-trend-lesz-az-okori-borkeszites-5616> <http://www.independent.co.uk/extras/indybest/food-drink/best-orange-wines-10418861.html> <https://www.fastcodesign.com/3049731/the-rise-of-orange-wine> (Acquired: 18.01.2017.)
- [5] <http://www.foodandwine.hu/2011/12/08/gruziai-uti-elmanyek-interju-dr-kosarka-jozseffel/> (Acquired: 18.01.2017.)
- [6] De Beer, D., Joubert, E., Gelderblom, W.C.A., Manley, M. (2002): *Phenolic compounds: A review of their possible role as in vivo antioxidants of wine*. S. Afr. J. of Enol. Vitic. 23(2):48–61.
- [7] Kállay M. (1998): *Borászati kémia*. In: Eperjesi, I – Kállay, M. – Magyar I.: *Borászat*. Mezőgazda Kiadó, Budapest
- [8] Eperjesi I. – Horváth Cs. – Sidlovits D. – Pás-ti Gy. – Zilai Z. (2010): *Borászati technológia*, Mezőgazda Kiadó, Budapest
- [9] Peryam D.R., Pilgrim F.J. (1957): *Hedonic scale method of measuring food preferences*, Food technology, 11: Suppl. 1:9-14
- [10] Lehota J. (szerk.) (2001): *Élelmiszer-gazdasági marketing*. Műszaki Könyvkiadó, Budapest

- [11] Törőcsik M. (2016): *A fogyasztói magatartás új tendenciái*, Vezetéstudomány, XLVII. évf. 2016. Marketingtudomány különszám
- [12] Törőcsik M. (2010): *Food trendek*. Korunk III. évfolyam 12. p. 59-65
- [13] <https://www.google.hu/search?q=clean+label&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwijps2zvJDTAh> (Acquired: 18.01.2017.)
- [14] <http://www.mintel.com/global-food-and-drink-trends> (Acquired: 18.01.2017.)
- [15] Hofmeister.T.Á.,Totth,G.(2004): *Borvásárlási magatartás és érték alapú fogyasztói szegmentáció*, in: Berács J, Lehota J, Piskóti I, Rekettye G (szerk.) *Marketingelmélet a gyakorlatban*. 335 p. Budapest: KJK-KERSZÖV Jogi és Üzleti Kiadó Kft., 2004. pp. 165-179.
- [16] Piskóti,I (2010): *A zászlóshajó viharai - borfogyasztás – borvásárlás* In: Papp-Váry Árpád, Csépe Andrea (szerk.) „Új marketing világrend”: MOK 16. országos konferenciája, Budapest: Budapesti Kommunikációs és Üzleti Főiskola, pp. 250-259.

- [17] Nagy Sz.(2012): *A társadalmi marketing aktuális kérdéseiről-A környezettudatos magatartás mozgatóerői* Gazdaságtudományi közlemények: A Miskolci Egyetem közleményei 6:(1) pp. 61-74.
- [18] Gilly Zs. (2011): *Ökológiai lábnyom, Dél-Dunántúli Kooperációs Kutatási Központ*
- [19] Hofmeister.T.Á.-Kasza,K.K.-Piskóti,M.(2013): *A környezetbarát fogyasztói magatartás formái, motivációi és a háttérükben álló pszichográfiai tényezők vizsgálata Magyarországon*, Marketing és menedzsment 47:(3) pp. 34-42.



extens<sup>o</sup>

## forradalmian új tejanalízis

Univerzális megoldás az összes toxin és antibiotikum maradvány egyidejű vizsgálatához tejmintából.  $\beta$ -laktámok, tetraciklinek, szulfonamidok, aflatoxin M1, aminoglikozidok, quinolon, lincosamidok, szulfonamidok, klóramfenikolok, trimethopri, melamine stb.



Előnyök:

- Képes egyidejűleg 90 antibiotikum maradványt és toxint kimutatni 13 perc alatt
- Egyszerűen választható a vizsgálandó szennyező anyagok száma, típusa
- Teljes körű adatkezelési szolgáltatás: adattárolás, export, megosztás, letöltés, figyelmeztető üzenetek küldése SMS-ben
- Vonalkód alapú minta és reagens felismerés
- Beépített GPS modul



[www.bentleylabor.hu](http://www.bentleylabor.hu)

Bentley Magyarország Kft.  
8000 Székesfehérvár, Kálmos utca 2.  
[hungary@bentleyinstruments.com](mailto:hungary@bentleyinstruments.com)  
Tel.: +36 22 414 100

