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РОЗДІЛ 4

**СУЧАСНІ ТЕНДЕНЦІЇ В ТЕХНОЛОГІЇ ПИТНОЇ ВОДИ ТА
ПЕРЕРОБЦІ М'ЯСА, МОЛОКА Й МОРЕПРОДУКТІВ**

Materials and methods. Sweet wines were obtained from Marselan grapes that had been frozen in refrigerator at $-10\text{ }^{\circ}\text{C}$ during 7 days and from grapes harvested while air temperature was $-7\text{ }^{\circ}\text{C}$ according to laws of OIV in December of 2016. Determination of volatiles was carried out using of Gas chromatography (GC) Agilent Technology 7890A (Agilent Technologies, Inc., USA). The components were quantified by comparing of the mass spectra of the substances identified in the chromatogram and the standard library of mass spectra.

Results and discussion. Firstly, Marselan variety was chosen for freezing naturally due to characteristics appreciated for icewine grapes including thick skin, late maturing, high natural acidity. Marselan originated from south of France and favored in hot climate withstood frequent precipitation especially during October in Odessa region that also is important to produce rare wine without loses of grapes caused by high water status before first frosts.

In wine made by natural freezing (NF) 35 compounds were detected and 40 ones were found in wine of artificial freezing (AF). Concentrations of alcohols in both wines were the highest among aroma volatiles counting more than 60 % and 40 % in wines of NF and AF accordingly. In wine of NF alcohol with mushroom odor 1-Octen-3-ol always presented in wines from overripe grapes and slight concentrations of C_6 compounds with green and herbaceous aromas including 1-hexanol and Cis-3-Hexen-1-ol on presence of which had probably influenced rainfall during later stages of ripening (for Marselan-late of October) were indicated. The most various aroma group of investigated wines was esters representing 13 and 15 compounds in wines of NF and AF respectively. Isoamile acetate, ethyl hexanoate, ethyl octanoate and hexyl acetate had the highest concentrations in wine of AF. Tendency to a limited increase of isoamyl and 2-phenethyl acetate was observed in wine made by NF due to the possible esterase activity of *B. cinerea* in sweet must. In small amount benzene acetaldehyde possessing floral odor was found in both wine samples. 2-methyl-3-Pentanol, 4-methyl-1-Pentanol impacting on unpleasant character and insignificant amounts of alpha-terpineol and linalol having flowery odor were identified only in wine of AF. Most of acids founded by GC affecting rancid and strong odors represented practically 30 % of total volatiles in wine of AF that is twice more than in another one.

Conclusions. Both wine samples are similar to majority of volatile compounds but differ by its concentrations where alcohols and esters were determined as the main aroma indicators characterized by fruity and flowery odors. Agricultural climatic conditions of Odessa region were suitable to obtain icewine harvest without use of artificial freezing that is energy demanding in production of elite wines.

Supervisor — DSc., Prof. Tkachenko O.

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SCIENTIFIC GROUNDING OF TECHNOLOGY OF PROCESSING OF SECONDARY PRODUCTS OF WINEMAKING

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Secondary products of winemaking are formed during processing of grapes, fermentation, wine clarification and aging of wine materials and wines. They can be reused as raw materials in certain ways.

The most common secondary products of winemaking are grape pomace, grape stems and seeds, yeast sediment, cream of tartar etc. When reusing them in rational and complex way tartaric acid, ethanol, grape oil, tannin, food colorants, fodder yeasts and other products can be obtained.

Justification of technology of processing of a grape pomace and stems is important because:

1. In scientific literature there are no evidence-based approaches to development of the complex resource-saving technologies of processing of secondary raw materials allowing to receive products with high content of biologically active compounds.

2. Content of many biologically active compounds in grape pomace and stems considerably surpass their content in fresh grapes.

3. Phenolic compounds are characterized by a wide range of pharmacological activity whose cornerstone – a powerful antioxidant effect is surpassing many times over similar effect of vitamin C and E.

4. The grape pomace and stems constitute from 10 to 20 % of the total amount of grapes being processed.

The lack of innovative technologies as well as the enterprises for utilization of these secondary products of winemaking in Ukraine leads to loss of bankrolls as the possibility of receiving valuable products for various industries (such as food, pharmaceutical, perfumery and cosmetic) is missed.

Nowadays researchers pay the increasing attention to oxidizing damage of biological molecules which is mainly generated by the free radicals. Such diseases as cancer, atherosclerosis, Parkinson's and Alzheimer diseases etc are associated with consequences of a free-radical oxidation.

Natural polyphenolic bio-antioxidants can be used to prevent an oxidizing damage.

The complex of the anthocyanins that makes part of the extract gotten from red grapes' pomace promotes delay of a human body aging. The phenolic substances extracted from grape stems possess antiviral, antimicrobial, fungistatic, capillary protective, anti-inflammatory and anti-mutagen action.

Anthocyanins and also resveratrol have the greatest biological activity. The last reveals hypocholesterolemic, cardio-protective and anti-carcinogenic action besides its strong antioxidant ability.

Considering all the reasons mentioned earlier, the need of development of an evidence-based technology of processing of a grape pomace and stems is obvious.

For this purpose researches on determination of optimal parameters of extraction of Phenolics from the Odessa Black grapes' pomace and stems were carried out.

It was defined that extraction of Phenolics takes place most efficiently when the degree of dispersion of raw materials is 0,5...1,0 mm. This significant increase of an interaction surface between particles of raw materials and an extragent results in a higher concentration of Phenolics in extracts.

The analysis of the data specified on fig. 1-2 shows that the best extragent is the aqueous solution of ethanol which contains 60 % of alcohol.

The developed parameters of extraction will allow obtaining as much biologically active substances which are contained in a grape pomace and stems as possible.

Introduction of the elaborated technology will positively affect the environmental protection, will increase effectiveness of wine-making productions and also will become a source of additional profit that will allow reducing prime cost of a main product (which is wine).

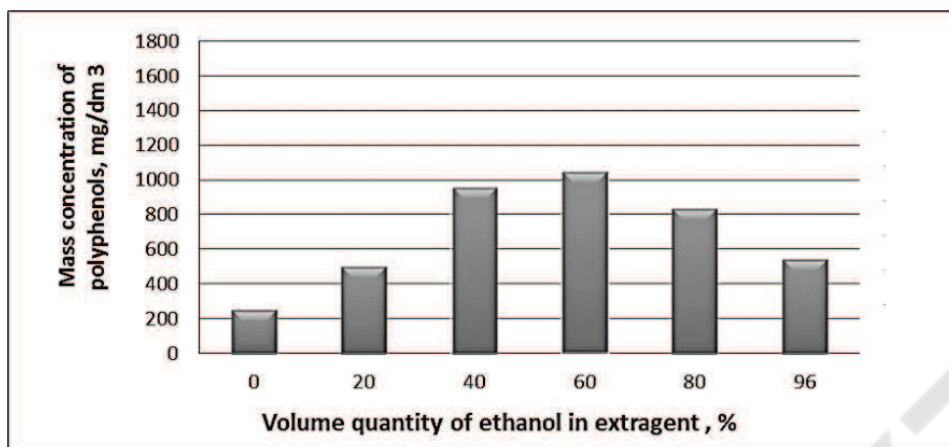


Fig. 1– Influence of quantity of alcohol in extractant on extraction of Phenolics from the Odessa Black grapes' pomace

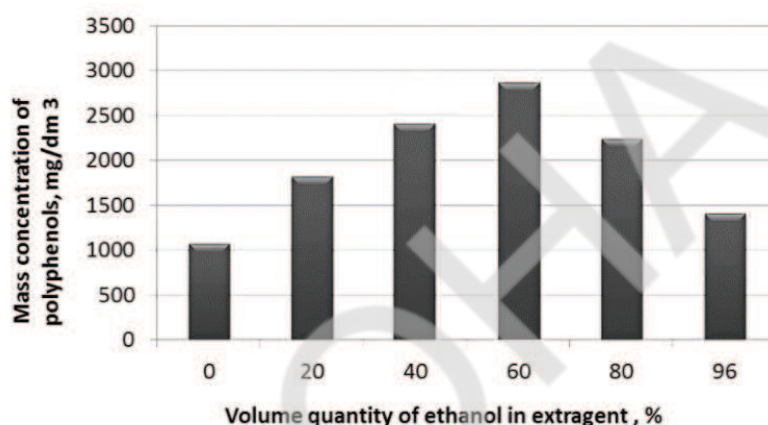


Fig. 2 – Influence of quantity of alcohol in extractant on extraction of Phenolics from the Odessa Black grapes' stems

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USE ULTRAFILTRATION IN THE PROCESS OF CONCENTRATION CURDY WHEY Mitkin I.V.	107
ВПЛИВ СОЛЕЙ ПЛАВЛЕННЯ НА ЕФЕКТИВНІСТЬ ВИРОБНИЦТВА ТА ЯКІСТЬ ПЛАВЛЕНИХ СИРІВ Перетяцько О.Г.	108
КРІОПОРОШКИ У ТЕХНОЛОГІЇ МОЛОЧНИХ ПРОДУКТІВ ЛІКУВАЛЬНО- ПРОФІЛАКТИЧНОГО СПРЯМУВАННЯ Дякун Т., Беницька А., Пристанський Р.	109
ДОСЛІДЖЕННЯ ВЛАСТИВОСТЕЙ ПРОМИСЛОВО-ПЕРСПЕКТИВНИХ ШТАМІВ МІКРОБІАЛЬНИХ КУЛЬТУР, ВИДІЛЕНИХ ІЗ ТРАДИЦІЙНОЇ КАРПАТСЬКОЇ БРИНЗИ Кушнір І.І.	111
ІММОБІЛІЗАЦІЯ СИЧУЖНОГО ФЕРМЕНТУ (РЕНІНУ) НА КАПРОНОВОМУ ВОЛОКНІ Проданова Г.О.	113
КАТЕГОРИЯ ЗАЩИЩЕННЫХ ГЕОГРАФИЧЕСКИХ УКАЗАНИЙ (PGI), КАК ИНСТРУМЕНТ УПРАВЛЕНИЯ КАЧЕСТВОМ СТОЛОВЫХ ВИН Табачек Е. В., Батраков А.О.	114
ОБГРУНТУВАННЯ ПАРАМЕТРІВ ПРОЦЕСУ ВИЛУЧЕННЯ БІОЛОГІЧНО АКТИВНИХ СПОЛУК ВИНОГРАДУ СОРТУ ОДЕСЬКИЙ ЧОРНИЙ Паламар В.Ю.	115
COMPARATIVE ANALYSIS OF VOLATILES OF SWEET WINES OBTAINED BY NATURAL AND ARTIFICIAL FREEZING OF MARSELAN GRAPES Ostapenko Viktoriia	117
SCIENTIFIC GROUNDING OF TECHNOLOGY OF PROCESSING OF SECONDARY PRODUCTS OF WINEMAKING Vladislav Palamar, Ruslan Todorov, Ruslana Kruchek, Markevich Larisa.....	118
РОЗРОБКА ТЕХНОЛОГІЇ ЕКСТРАКТІВ З ВИСОКИМ ВМІСТОМ ФЕНОЛЬНИХ АНТИОКСИДАНТІВ З ГРЕБЕНІВ ВИНОГРАДУ Тодоров Р.І.	121
СУЧАСНІ ПІДХОДИ ДО СТВОРЕННЯ КОМПОЗИЦІЙ ПРЯНО-АРОМАТИЧНОЇ СИРОВИНИ У ВИРОБНИЦТВІ ВЕРМУТІВ Буяджи Т.Ю., Васильєва Є.В.	123
ОСНОВНІ ВИМОГИ ДО ЯКОСТІ СОЛОДУ ПРИ ВИРОБНИЦТВІ ПИВА СВІТЛИХ СОРТІВ Чуб С.А.	125
THE USE OF THE ENZYME PREPARATION MATUREX IN HIGH GRAVITY BREWING Kharandiuk Tetiana Valeriivna, Kosiv Ruslana Bohdanivna	127
КМЦ – СУЧАСНА АЛЬТЕРНАТИВА ОБРОБКИ ВИН ХОЛОДОМ Малиновська Ю.В.	129
ПРОБЛЕМИ ЗМІНИ СМАКУ ПИВА ПРИ ЙОГО ЗБЕРІГАННІ Полюжин Л.І.	130

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