

# СПИСЪК

на научните публикации  
на гл. ас. д-р **МИЛЕНА МЕТОДИЕВА РУСКОВА**  
за участие в конкурса за заемане на академичната длъжност  
„ДОЦЕНТ”

## I. ПУБЛИКАЦИИ В МЕЖДУНАРОДНИ НАУЧНИ СПИСАНИЯ С ИМПАКТ ФАКТОР

1. N. Penov, T. Petrova, **M. Ruskova**, N. Toshkov, N. Menkov (2012): Moisture Sorption Isotherms of Lentil Extrudates, International Journal of Food Engineering, Vol. 8, Iss. 3, Pages –, ISSN (Online) 1556-3758, DOI: 10.1515/1556-3758.2834, July 2012, IF 0.463

***Abstract:*** *The equilibrium moisture contents (EMC) were determined for lentil extrudates produced under different processing conditions at 25°C and eight relative humidity (RH) in the range of 0.113 – 0.902. It was established that for the ten extruded samples the EMC values at the same RH were not statistically equal. Four models – Chung-Pfost, Halsey, Oswin, and Henderson equations were applied for analyzing the experimental data. The Oswin model was most suitable for describing the relationship between the EMC and RH.*

2. **M. Ruskova**, S. Aleksandrov, I. Bakalov, E. Popescu, T. Petrova, V. Gotcheva, N. Penov (2016): Osmotic dehydration as a preliminary technological process for the production of dried chokeberry (*Aronia melanocarpa*), Bulgarian Chemical Communications, Vol. 48, Special issue C, IF 0.349, in press

**Abstract:**

*Black chokeberry was subjected to osmotic dehydration in a solution containing concentrated sour cherry juice (60% w:w), concentrated apple juice (20% w:w), and inulin (20% w:w). The effects of osmotic treatment temperature, solution concentration, and fruit:solution ratio on water loss (WL) and weight reduction (WR) of chokeberry fruits were studied. Response surface methodology (RSM) was applied to assess the combinations of osmotic treatment temperature (43, 50, 60, 70, and 77°C), solution*

concentration (47, 50, 55, 60, and 63°Brix), and chokeberry:solution ratio (1:2, 1:3, 1:4, 1:5, and 1:6 w:w). Water loss values varied from 20.82 to 43.43% and the weight reduction values varied from 11.93 to 41.58%, respectively. Osmotic treatment temperature had the highest impact on water loss, and fruit weight reduction was mostly influenced by the osmotic solution concentration, with both effects being linear.

3. **M. Ruskova**, T. Petrova, I. Bakalov, G. Zsivanovits, N. Toshkov, N. Penov (2016): Effect of extrusion conditions on breaking strength of lentil extrudates, Bulgarian Chemical Communications, Vol. 48, Special issue C, IF 0.349, in press

**Abstract:**

*Lentil semolina was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany) with screw diameter 20 mm and die diameter 5 mm. A central composite rotatable design (CCRD) was adopted to study the effect of moisture content, barrel temperature, metering zone temperature, screw speed, and screw compression ratio on breaking strength index of lentil extrudates. The breaking strength index of the extrudate was determined using a texture analyser TA.XT Plus (Stable Micro Systems, England) and calculated using peak breaking force divide by extrudate diameter. The breaking strength index values varied from 12.2 to 32.87 N/mm. Analysis of variance indicates that linear effect due to the moisture content of lentil semolina had the highest impact on the breaking strength index. The regression model fitted to the experimental data showed comparatively high coefficient of determination.*

**II. ПУБЛИКАЦИИ В МЕЖДУНАРОДНИ НАУЧНИ СПИСАНИЯ БЕЗ ИМПАКТ ФАКТОР**

4. D. Iserliyska, A. Resurreccion, P. Paraskova, M. Chinnan, **M. Ruinova**, T. Petrova (2007): Attributes critical to product acceptance of chocolate peanut cream by Bulgarian consumers. Peanut Science, 33 (2), 53-58, ISSN 0095-3679

**Abstract:**

*Central location tests (CLT) were conducted for five consecutive days to determine consumer acceptance of chocolate peanut cream. Scales for intensity, just-about-right (JAR) and hedonic ratings were used to measure each attribute evaluated. Consumers (n = 152)*

*were asked to rate the intensities of spreadability, chocolate, peanut and overall flavors, and texture using a 9 - point scale. JAR scales were used to evaluate the same attributes as well as aroma; while overall acceptance was assessed using a 9 - point hedonic scale. Means and frequencies of each sensory attribute were obtained. Chi-square analysis was used to analyze JAR ratings.*

5. D. Iserliyska, A. Resurreccion, P. Paraskova, M. S. Chinnan, **M. Ruinova**, T. Petrova (2005): Consumer acceptance of Bulgarian Peanut Butters employing Central Location Testing (CLT), Peanut Science, 32 (2), 126-132, ISSN 0095-3679

**Abstract:**

Peanut butter and peanut butter based products, although flavorful and nutritious, are rarely found in Eastern European diets. To exploit marketing opportunities for peanut products in the region, consumer acceptance of smooth (PBS) and crunchy (PBCN) peanut butters was determined through central location tests (CLT) at an International Food Fair in Plovdiv, Bulgaria. Consumers (147) were asked to rate their feelings about the intensities of spreadability, overall flavor, and texture using a nine-point intensity scale. Just-about-right (JAR) scales were used to evaluate the same attributes and aroma. Overall acceptance was assessed using a nine-point hedonic scale. Descriptive statistics, the paired t-test and chisquare test were used to analyze the data. The cross tabulation indicated that all of the products tested were rated acceptable for consumers of all ages and income ranges. This information provides a basis for introducing peanut butter to the Bulgarian and Eastern European consumers, to be used by food processing enterprises interested in expanding the market for peanuts.

6. **M. Ruskova**, T. Petrova, Iv. Bakalov, N. Penov, Ap. Simitchiev (2016). Optimization of formulations with balanced biochemical composition and possibilities for their extrusion, International Journal "Agricultural science and technology", 8 (2), 111 - 116

**Abstract:**

*Combinations of different raw materials (beans, einkorn wheat, and buckwheat) for obtaining formulations with high protein content and balanced amino acid composition were studied using simplex centroid design. The target functions for optimization were content*

of protein, sulfur-containing amino acid methionine and cysteine, lysine, and tryptophan. The optimal area of combinations of raw materials in the food formulas with balanced biochemical composition was obtained. Optimized ternary mixture consisting of 50% bean, 40% einkorn wheat, and 10% buckwheat with different moisture content (16, 22, and 28%) has been extruded in a laboratory single screw extruder (Brabender 20 DN, Germany). Extrusion parameters were as follows: feed screw speed 50 rpm, die diameter 3 mm, screw compression ratio 2:1, temperature profile 100/140/160°C, screw speed 160 rpm. The three extrudates with different initial moisture were evaluated by sectional expansion index, water absorption index, water solubility index, and density, with the aim of choosing the best treatment. The results demonstrated that the 22% initial moisture content yielded an extrudate with good physicochemical characteristics overall but an optimization study is needed to confirm this.

7. A. Simitchiev, T. Petrova, **M. Ruskova**, N. Penov (2014): Effect of extrusion variables on the dynamic viscosity of extruded lentil flours, Journal of Food and Packaging Science, Technique and Technologies, 4, 50-54

**Abstract:**

*Lentil semolina was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany). Effects of moisture content, barrel temperature, metering zone temperature, screw speed, and screw compression ratio on dynamic viscosity of the extruded lentil flours were studied. Response surface methodology with combinations of moisture content (18, 22, 25, 28, 32%), metering zone temperature (136, 150, 160, 170, 184°C), barrel temperature (136, 150, 160, 170, 184°C), screw speed (132, 160, 180, 200, 228 rpm), and screw compression ratio (1:1, 2:1, 3:1, 4:1, 5:1), was applied.*

*The dynamic viscosity of the extruded lentil flours was measured with a viscometer "Brookfield RV-DV II + Pro", USA. The dynamic viscosity values varied from 25 to 95 mPa.s. The linear effect due to the moisture content had mostly influence on the dynamic viscosity.*

8. **M. Ruskova**, S. Aleksandrov, T. Petrova, I. Bakalov, V. Gotcheva, N. Penov (2016): Effect of osmotic dehydration variables on the

water loss of blackcurrants, Journal of Food and Packaging Science, Technique and Technologies, №10, 10-13

**Abstract:**

*Blackcurrants were subjected to osmotic dehydration in a solution containing concentrated sour cherry juice (60%), concentrated apple juice (20%), and inulin (20%). Effects of some characteristics such as osmotic treatment temperature, solution concentration, and product/solution ratio on water loss of blackcurrants were investigated. Response surface methodology with combinations of osmotic treatment temperature (43, 50, 60, 70, 77°C), solution concentration (47, 50, 55, 60, 63° Brix), and blackcurrants/solution ratio (1:2, 1:3, 1:4, 1:5, 1:6) was applied. The water loss values varied from 20,15 to 77,31%. The linear effect due to the osmotic treatment temperature had the highest impact on water loss followed by its squared effect.*

9. **M. Ruskova**, Iv. Bakalov, T. Petrova, Kr. Ivanova, N. Penov (2016): Extrusion cooking of a legume-cereal mixture: Effect of extrusion variables on specific mechanical energy, Journal of Food and Packaging Science, Technique and Technologies, №9, 34-38

**Abstract:**

*Lentil semolina was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany). Effects of moisture content, barrel temperature, metering zone temperature, screw speed, and screw compression ratio on dynamic viscosity of the extruded lentil flours were studied. Response surface methodology with combinations of moisture content (18, 22, 25, 28, 32%), metering zone temperature (136, 150, 160, 170, 184°C), barrel temperature (136, 150, 160, 170, 184°C), screw speed (132, 160, 180, 200, 228 rpm), and screw compression ratio (1:1, 2:1, 3:1, 4:1, 5:1), was applied. The dynamic viscosity of the extruded lentil flours was measured with a viscometer “Brookfield RV-DV II + Pro”, USA. The dynamic viscosity values varied from 25 to 95 mPa.s. The linear effect due to the moisture content had mostly influence on the dynamic viscosity.*

10. T. Petrova, N. Penov, **M. Ruskova**, P. Tzonev (2009): Effects of some extrusion parameters on the specific mechanical energy of extruded lentils, Journal of Mountain Agriculture on the Balkans, 12 (5), 1136-1145.

### **Abstract:**

*Lentil semolina was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany) with screw diameter 19 mm and die diameter 5 mm. Effects of moisture content, barrel temperature, metering zone temperature, screw speed, and screw compression ratio on specific mechanical energy of the extruded products were studied. Response surface methodology with combinations of moisture content (18, 22, 25, 28, 32%), barrel temperature (136, 150, 160, 170, 184°C), metering zone temperature (136, 150, 160, 170, 184°C), screw speed (132, 160, 180, 200, 228 rpm), and screw compression ratio (1:1, 2:1, 3:1, 4:1, 5:1) was applied. Feed screw speed was fixed at 70 rpm. Feed zone temperature was kept constant at 150°C.*

*The linear effect due to the moisture content of lentil semolina had mostly influence on the specific mechanical energy followed from the effect due to the screw compression ratio.*

### **III. ПУБЛИКАЦИИ В БЪЛГАРСКИ ИЗДАНИЯ**

#### **В списания**

11. **М. Руйнова**, Т. Петрова, Д. Исерлийска, П. Параскова, М. Чинан, А. Резорекшън (2006): Качествени характеристики и възприемане от консуматорите на два варианта фъстъци, покрити с мед. Хранително-вкусова промишленост, №12, 14-16

#### **Резюме:**

*Разработени са два рецептурни варианта фъстъци, покрити с мед, различаващи се по съдържанието на сол и захар, и начина им на приготвяне.*

*Установен е компонентният състав на получените продукти и са направени някои химични анализи.*

*В специално проектиран щанд по време на Пролетния технически панаир 2005 е проведен неформален консуматорски тест за установяване начина на възприемане на фъстъчените продукти от консуматорите. Двама варианта фъстъци, покрити с мед (вариант А и вариант Б) са оценени по 9-точкова хедонична скала (от изключително не харесвам до изключително харесвам) от участниците в теста (n = 200). Получен е рейтинг "средно харесвам" (p = 0.05) за двата продукта. Фъстъците, покрити с мед – вариант Б се възприемат от 92.5% от участниците, а тези от вариант А - от 88.5%.*

12. Д. Исерлийска, **М. Руйнова**, Т. Петрова, П. Параскова, А. Резорекшън, М. Чинан (2006): Централно-локален консуматорски тест за възприемане на фъстъчено-шоколадов крем. Хранително-вкусова промишленост, №7, 15-20

**Резюме:**

*Проведено е изследване за начина на възприемане от консуматорите на фъстъчено-шоколадов крем, аналог на шоколадово - фъстъчени крем Nutella™. Продуктът е разработен в лабораторни условия по оригинална американска рецептура и технология (С. А. Chi and A. Resurreccion, 2004). Централно-локален консуматорски тест е осъществен по време на Пролетния Технически Панаир 2005 в Пловдив. Проучването е направено с участието на 152 консуматори в рамките на пет последователни дни. Консуматорският тест е базиран върху използването на три вида 9-точкови хедонични скали: скала за интензивност на дадения атрибут, точно както трябва и хедонична скали. Данните от консуматорския тест са обработени със SyStat 1.0.7., 1997 програмен продукт. От анализа на резултатите е установено, че фъстъчено - шоколадовият крем се възприема от консуматорите в степен, "харесвам средно" по 9-точковата хедонична скала (изключително не харесвам, изключително харесвам). Сензорните атрибути ( $R^2 = 0.76$ ), повлияващи в най-голяма степен консуматорското мнение са: намазваемост ( $p = 0.01$ ), шоколадов и най-общ флейвър ( $p = 0.05$ ).*

13. Т. Петрова, **М. Руйнова**, Д. Исерлийска, П. Параскова, М. Чинан, А. Резорекшън (2006): Качествени характеристики и възприемане от консуматорите на фъстъчени кремове. Хранително-вкусова промишленост, №2, 20-22

**Резюме:**

*Развита е технологията за производство на фъстъчени кремове, като са създадени нови продукти на база фъстъчено масло, близки до вкуса на българския консуматор. За да се установи степента на възприемане на тези продукти от консуматорите, по време на Пролетния пловдивски панаир '2005, в специално проектиран за целта щанд, бе проведен неформален консуматорски тест. Участниците в теста ( $n = 200$ ) оценяваха по 9-точкова*

хедонична скала (от „изключително не харесвам” до „изключително харесвам”) два вида фъстъчени кремове: 1) фъстъчен крем със стафиди, и 2) фъстъчен крем с шоколад, стафиди и парчета фъстъци. Фъстъченият крем със стафиди бе добре възприет от 83% от консуматорите-оценители и получи рейтинг „малко харесвам”, който е значимо ( $p = 0.05$ ) по-нисък от този на фъстъчения крем с шоколад, стафиди и парченца фъстъци – „средно харесвам” и се възприема добре от 94% от участниците в теста.

Получените продукти са богати на въглехидрати (около 33%), мазнини (около 30%), протеини (от 14 до 26%), както и на различни макро- и микроелементи ( $K$  – около 630 mg%;  $Na$  - около 350 mg%;  $P$  - около 140 mg%;  $Mg$  - около 100 mg%;). Съдържанието на витамин  $E$  във фъстъчените кремове е около 6 mg%, а на витамин  $B_1$  - около 0,06 mg%.

14. Д. Исерлийска, **М. Руйнова**, Т. Петрова, П. Параскова, А. Резорекшън, М. Чинан (2006): Проучване мнението на потребителя относно българско фъстъчено масло чрез провеждане на масов консуматорски сензорен тест за оценка на нов продукт. Хранително-вкусова промишленост, №4, 42-48

#### **Резюме:**

Масов консуматорски тест за сензорна оценка на фъстъчено масло беше проведен по време на Пролетен Технически Панаир 2005 в Пловдив. Изследването продължи пет дни и участие взеха 147 потребители. Сензорната оценка се базираше на използването на три вида скали: скала за интензитет на дадения атрибут, точно както трябва и хедонична скали. Целта на теста беше да се проучи мнението на консуматора относно българско фъстъчено масло като нов и малко познат продукт на нашия пазар. Продуктът беше разработен в два варианта: 1) фъстъчено масло с гладка консистенция – вариант А; 2) фъстъчено масло с добавени парченца фъстъци – вариант Б. Статистическата обработка на резултатите показва, че вариант А, както и вариант Б са харесвани в еднаква степен от потребителите, “харесвам средно” по 9-точковата хедонична скала (изключително не харесвам, изключително харесвам). Определени бяха сензорните атрибути, повлияващи в най-голяма степен потребителското мнение



както следва: за вариант А – флейвър и текстура; за вариант Б – намазваемост, флейвър и текстура.

#### IV. В ГОДИШНИЦИ НА УНИВЕРСИТЕТИ ИЛИ ИНСТИТУТИ

##### Доклади от международни симпозиуми и конференции

15. T. Petrova, N. Penov, **M. Ruynova**, P. Tzonev (2009): Effects of some extrusion parameters on colour of extruded lentil semolina, International Science conference "Economics and Society development on the Base of Knowledge", 4th - 5th June 2009, Stara Zagora, Bulgaria, Vol. I Agricultural science. Plant studies, 526-530

##### **Abstract:**

Lentil semolina was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany). Effects of moisture content, barrel temperature, metering zone temperature, screw speed, and screw compression ratio on colour of the extruded products were studied. Response surface methodology with combinations of moisture content (18, 22, 25, 28, 32%), metering zone temperature (136, 150, 160, 170, 184 °C), barrel temperature (136, 150, 160, 170, 184 °C), screw speed (132, 160, 180, 200, 228 rpm), and screw compression ratio (1:1, 2:1, 3:1, 4:1, 5:1) was applied. The color of the extrudates was measured with a colorimeter Colorgard 2000, BYK – Gardner Inc., USA.

16. T. Petrova, **M. Ruskova**, P. Tzonev, G. Zsivanovits, N. Penov, 2009. Effect of extrusion variables on the hardness of lentil semolina extrudates, 7<sup>th</sup> BPU General Conference, Alexandroupolis, Greece, 9-13 Sept 2009, AIP Conference Proceedings, vol. 1203, 1031-1036

##### **Abstract:**

*Lentil semolina was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany) with screw diameter 19 mm and die diameter 5 mm. Effects of moisture content, barrel temperature, metering zone temperature, screw speed, and screw compression ratio on hardness of the extruded products were studied. Response surface methodology with combinations of moisture content (18, 22, 25, 28, 32%), metering zone temperature (136, 150, 160, 170, 184°C), barrel temperature (136, 150, 160, 170, 184°C), screw speed (132, 160, 180, 200, 228 rpm), and screw compression ratio*

(1:1, 2:1, 3:1, 4:1, 5:1) was applied. Feed screw speed was fixed at 70 rpm. Feed zone temperature was kept constant at 150°C. The hardness of the extrudates was measured with a TA.XT Plus Texture Analyser, Stable Micro Systems. The textural profiles of the extrudates showed that feed moisture had the highest effect on the hardness.

17. Т. Петрова, Н. Пенев, **М. Рускова**, М. Тамова (2012): Реологические свойства экструдатов чечевицы, I Международной научно-практической конференции „Инновационные технологии в пищевой и перерабатывающей промышленности”, 20-22 ноября 2012 г., Краснодар, Сб. материалов, 752-756

**Резюме:**

*Исследовано влияние влажности исходного продукта, температуры и градиента скорости на вязкость экструдата из гриса чечевицы, полученном на одношнековом экструдере (Brabender 20 DN, Germany). Выявлено, что градиент скорости оказывает наибольшее воздействие на вязкость экструдатов.*

18. Т. Петрова, Н. Пенев, **М. Руйнова**, П. Цонев (2010): Влияние влагосодержания на некоторые физические свойства чечевичных экструдатов, Труды, VII Международной научно-практической конференции "Пища. Экология. Качество", 23-24 сентября 2010 г., Новосибирск, 189-191

**Резюме:**

*Процент влагосодержания в чечевичной крупе перед экструзии влияет на структурно-механические свойства экструдатов, а именно степень индекса расширения, плотность и твердость. При высоком проценте влагосодержания отмечены наиболее низкие значения исследуемых показателей.*

19. P. Ivanova, T. Petrova, **M. Ruskova**, K. Petrova, N. Penov (2015): Optimization of the drinks composition from plum, blackberry and pear, International scientific-practical conference "Food, technologies & health", 20 November 2015, FRDI-Plovdiv, CD – ISBN 2367-6213, 87- 93

**Abstract:**

*The objective of this research was to development model examples of drinks by cold pressing on the base of plum, blackberry and pear.*

*The resulting variations of drinks were determined antioxidants activity, total polyphenols and sensory evaluation, which was the basis for a mathematical model in optimizing their composition.*

*As a result of the selected raw materials, methods of applied technology and mathematical treatment was determined that the boundary of the target function for common sensory evaluation  $> 4$ , the content of total polyphenols  $> 300$  mg GAE/100 g and antioxidant activity  $> 3000$   $\mu$ mol TE/100 g product.*

20. T. Petrova, Iv. Bakalov, **M. Ruskova**, G. Zsivanovits, E. Vozary, N. Penov (2015): Effect of extrusion variables on hardness of bean-based extrudates. Food Science Conference 2015, Faculty of Food Science of Corvinus University of Budapest, Book of Proceedings, ISBN 978-963- 503-550-2, 205-208

**Abstract:**

*A blend of semolina bean (50%), einkorn wheat (40%), and buckwheat (10%) was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany) with screw diameter 19 mm and die diameter 3 mm. Effects of moisture content, barrel temperature, screw speed, and screw compression ratio on hardness of bean-based extrudates were studied. Response surface methodology with combinations of moisture content (16, 19, 22, 25, 28%), barrel temperature (120, 140, 160, 180, 200°C), screw speed (120, 140, 160, 180, 200 rpm), and screw compression ratio (1:1, 2:1, 3:1, 4:1, 5:1) was applied. Feed screw speed was fixed at 50 rpm. Feed zone temperature and metering zone temperature were kept constant at 100 and 140°C, respectively.*

*The hardness of the extrudates was measured with a TA.XT Plus Texture Analyser, Stable Micro Systems. The textural profiles of the extrudates showed that screw compression ratio had the highest effect on the hardness.*

21. **M. Ruskova**, I. Bakalov, T. Petrova, G. Zsivanovits, K. Ivanova, N. Penov (2015): Effect of extrusion variables on breaking strength of bean-based extrudates, IVth International scientific-practical

conference “Food, technologies & health”, 20 November 2015, FRDI-Plovdiv, CD – ISBN 2367-6213, 66-70

**Abstract:**

*A blend of semolina bean (50%), einkorn wheat (40%), and buckwheat (10%) was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany) with screw diameter 19 mm and die diameter 3 mm. Effects of moisture content, barrel temperature, screw speed, and screw compression ratio on breaking strength of bean-based extrudates were studied. Response surface methodology with combinations of moisture content (16, 19, 22, 25, 28%), barrel temperature (120, 140, 160, 180, 200°C), screw speed (120, 140, 160, 180, 200 rpm), and screw compression ratio (1:1, 2:1, 3:1, 4:1, 5:1) was applied. Feed screw speed was fixed at 50 rpm. Feed zone temperature and metering zone temperature were kept constant at 100 and 140°C, respectively.*

*Breaking strength of extrudate was determined using a texture analyzer TA.XT Plus (Stable Micro Systems, England). Breaking strength was calculated using peak breaking force divide by extrudate diameter. The breaking strength values varied from 9.14 to 32.45 N/mm.*

22. **M. Ruskova, S. Aleksandrov, T. Petrova, V. Gotcheva, N. Penov** (2015): Effect of osmotic dehydration variables on the weight reduction of blackcurrants, IVth International scientific-practical conference “Food, technologies & health”, 20 November 2015, FRDI-Plovdiv, CD – ISBN 2367-6213, 81-86

**Abstract:**

*Blackcurrants were subjected to osmotic dehydration in a solution containing concentrated sour cherry juice (60%), concentrated apple juice (20%), and inulin (20%). Effects of osmotic treatment temperature, solution concentration, and ratio product / solution on weight reduction of blackcurrants were studied. Response surface methodology with combinations of osmotic treatment temperature (43, 50, 60, 70, 77°C), solution concentration (47, 50, 55, 60, 63° Brix), and blackcurrants:solution ratio (1:2, 1:3, 1:4, 1:5, 1:6) was applied. The weight reduction values varied from 17 to 62%. The linear effect due to the osmotic treatment temperature had the highest impact on weight reduction.*

23. T. Petrova, N. Penov, **M. Ruskova**, I. Bakalov, K. Kalcheva – Karadzhova (2015): Optimization of extrusion process for production of lentil extrudates, IVth International scientific-practical conference “Food, technologies & health”, 20 November 2015, FRDI-Plovdiv, CD – ISBN 2367-6213, 101-105

**Abstract:**

*Lentil semolina was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany). Central Composite Rotatable Design (CCRD) was used to optimize the extrusion parameters of lentil semolina for obtaining instant product suitable for preparation of paste or cream soup, by response surface methodology with five variables at five levels. The criterion established to determine the optimal extrusion conditions of lentil semolina was to find the conditions leading to high values of sectional expansion index, water absorption index, and degree of starch gelatinization, and low values of density and specific mechanical energy. Moisture content from 25 to 28%, barrel temperature from 155 to 165°C, metering zone temperature from 150 to 160°C, screw speed from 165 to 200 rpm, and screw compression ratio 3:1 could be recommended as optimal extrusion conditions of lentil semolina for obtaining instant product suitable for preparation of paste or cream soup.*

**Доклади от национални конференции с международно участие**

24. Н. Пенов, Т. Петрова, **М. Рускова**, И. Петрова (2013): Реологични характеристики на екструдати от леща, Научна конференция с международно участие “Хранителна наука, техника и технологии - 2013”, Научни трудове, УХТ – Пловдив, ISSN 1314-7102, т. LX, 166- 169

**Abstract:**

*Lentil semolina was extruded in a laboratory single screw extruder (Brabender 20 DN, Germany). The dynamic viscosity change under the conditions of different velocity gradients is studied. The pastes prepared from the lentil extrudate are classified as non-Newtonian fluids and have pseudoplastic behavior.*

25. Т. Петрова, **М. Рускова**, Б. Бръшлянова, П. Иванова, 2012. Изследване режимите на печене на тиквички и патладжани. Научна конференция с международно участие „Хранителна

наука, техника и технологии 2012”, 19-20 октомври 2012, УХТ - Пловдив, 360-361

**Резюме:**

*Изследвани са режимите на печене на тиквички и патладжани, нарязани на филийки с дебелина 5, 7 и 9 mm, на IMPINGER Conveyor Oven. Установен е рандемана при печене на зеленчуците. При режимите на печене с по-висока температура / по-кратко време рандемана е по-голям, като стойността му нараства с увеличаване дебелината на резанките. При печените тиквички разликата в рандемана между двата режима на печене – 280°C и 320°C е средно 19%, докато при печените патладжани тя е около 12%.*

26. **М. Рускова**, Св. Александров, А. Илиев, Н. Пенев, Т. Петрова, В. Гочева (2015): Оптимизация на компонентния състав на осмотични разтвори, Научна конференция с международно участие “Хранителна наука, техника и технологии 2015”, 23-24 октомври, Научни трудове, УХТ-Пловдив, 371-376

**Резюме:**

*In the present study, combinations of different osmotic agents (concentrated apple juice, concentrated sour cherry juice, and inulin) were applied for fruit dehydration. A simplex-centroid design was applied, and the target functions for optimization were water activity ( $a_w$ ), total monomeric anthocyanins, total phenolic content, and oxygen radical absorbance capacity (ORAC). As a result, the optimal area of combinations of osmotic agents in the osmotic solution for dehydration of fruits was identified.*

27. **М. Руйнова**, Т. Петрова, 2005. Райската ябълка (*Diospyrus kaki*) – ценна суровина за производство на нектари – I. Научна конференция “Хранителна наука, техника и технологии 2005”, 13 - 14 октомври, Научни трудове на УХТ – Пловдив, LII (2), 130-135

**Резюме:**

*В настоящата разработка са изследвани възможностите за получаване на нектар от райска ябълка (*Diospyrus kaki*), кайсия (*Prunus armeniaca*) и други плодове.*

*Разработени са моделни опити за установяване на неговия компонентен състав, технологията за преработка и*

*тяхното влияние върху качествените показатели на готовия продукт.*

*На вложените суровини и на нектара, непосредствено след тяхната термична обработка, са направени основни физикохимични анализи - сухо вещество, рН-стойност, обща киселинност, захари, аскорбинова киселина,  $\beta$ -каротини, цвят, минерални елементи.*

*Направените анализи и сензорна оценка показват, че в комбинация с кайсия плодове райската ябълка е подходяща за производство на нектар, който се характеризира със сладко-кисел вкус, запазени добри вкусови качества, нежна консистенция и цвят, свойствен за плодовете, от които е получен.*

08.11.2016 г.  
гр. Пловдив

**ПОДПИС:**

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