

## REFERENCES

- [1] Brosnan T, Sun D-W. Precooling techniques and applications for horticultural products — a review. *International Journal of Refrigeration*. 2001;24(2):154-70.
- [2] Wang L, Sun D-W. Rapid cooling of porous and moisture foods by using vacuum cooling technology. *Trends in Food Science & Technology*. 2001;12(5–6):174-84.
- [3] Sun D-W, Zheng L. Vacuum cooling technology for the agri-food industry: Past, present and future. *Journal of Food Engineering*. 2006;77(2):203-14.
- [4] Rennie TJ. Vacuum cooling for the fruit and vegetable industry. *Stewart Postharvest Review*. 2006;1(7).
- [5] Alarcon-Flores MI, Romero-Gonzalez R, Martinez Vidal JL, Egea Gonzalez FJ, Garrido Frenich A. Monitoring of phytochemicals in fresh and fresh-cut vegetables: a comparison. *Food Chem*. 2014;142:392-9.
- [6] Baslam M, Morales F, Garmendia I, Goicoechea N. Nutritional quality of outer and inner leaves of green and red pigmented lettuces (*Lactuca sativa* L.) consumed as salads. *Scientia Horticulturae*. 2013;151:103-11.
- [7] Marini F. Artificial neural networks in foodstuff analyses: Trends and perspectives A review. *Analytica Chimica Acta*. 2009;635(2):121-31.
- [8] Dębska B, Guzowska-Świder B. Application of artificial neural network in food classification. *Analytica Chimica Acta*. 2011;705(1–2):283-91.
- [9] Vlasov Y, Legin A, Rudnitskaya A, Di Natale C, D'Amico A. Nonspecific sensor arrays ("electronic tongue") for chemical analysis of liquids (IUPAC Technical Report). *Pure and Applied Chemistry*. 2005;77(11):1965-83

- [10] Peris M, Escuder-Gilabert L. Electronic noses and tongues to assess food authenticity and adulteration. *Trends in Food Science & Technology*. 2016;58(Supplement C):40-54.
- [11] Persaud K. Chapter 1 - Electronic Noses and Tongues in the Food Industry A2 - Méndez, María Luz Rodríguez. *Electronic Noses and Tongues in Food Science*. San Diego: Academic Press; 2016. p. 1-12.
- [12] Ouchi K, Gamache P, Acworth I, Watanabe S. Measurement of isoflavones using liquid chromatography with multi-channel coulometric electrochemical detection. *Biofactors*. 2004;22(1-4):353-6.
- [13] Hensley K, Maitt ML, Yu Z, Sang H, Markesbery WR, Floyd RA. Electrochemical analysis of protein nitrotyrosine and dityrosine in the Alzheimer brain indicates region-specific accumulation. *J Neurosci*. 1998;18(20):8126-32.
- [14] Kristal BS, Vigneau-Callahan KE, Moskowitz AJ, Matson WR. Purine catabolism: links to mitochondrial respiration and antioxidant defenses? *Arch Biochem Biophys*. 1999;370(1):22-33.
- [15] Gathungu RM, Bird SS, Sheldon DP, Kautz R, Vouros P, Matson WR, et al. Identification of metabolites from liquid chromatography–coulometric array detection profiling: Gas chromatography–mass spectrometry and refractionation provide essential information orthogonal to LC–MS/microNMR. *Analytical Biochemistry*. 2014;454(Supplement C):23-32.
- [16] Trojanowicz M. Recent developments in electrochemical flow detections--a review part II. *Liquid chromatography*. *Anal Chim Acta*. 2011;688(1):8-35.
- [17] Singh RP, Heldman DR. Chapter 6 - Refrigeration. *Introduction to Food Engineering (Fifth Edition)*. San Diego: Academic Press; 2014. p. 475-520.
- [18] Wills R, Golding J. *Postharvest: an introduction to the physiology and handling of fruit and vegetables*: UNSW press; 2016.
- [19] Kader AA, Rolle RS. *The role of post-harvest management in assuring the quality and safety of horticultural produce*: Food & Agriculture Org.; 2004.

- [20] DeEll JR, Vigneault C, Lemerre S. Water temperature for hydrocooling field cucumbers in relation to chilling injury during storage. *Postharvest Biology and Technology*. 2000;18(1):27-32.
- [21] Vigneault C, Goyette B, Gariépy Y, Cortbaoui P, Charles MT, Raghavan VGS. Effect of ear orientations on hydrocooling performance and quality of sweet corn. *Postharvest Biology and Technology*. 2007;43(3):351-7.
- [22] I. EDEOGU JFaJL. Comparison between vertical and horizontal air flow for fruit and vegetable precooling. *Canadian Agricultural Engineering*. 1997;39(2):107-12.
- [23] Pathare PB, Opara UL, Vigneault C, Delele MA, Al-Said FA-J. Design of packaging vents for cooling fresh horticultural produce. *Food and Bioprocess Technology*. 2012;5(6):2031-45.
- [24] Sargent SA, Talbot MT, Brecht JK. Evaluating precooling methods for vegetable packinghouse operations. *Eng Sci*. 1988;23:1147-55.
- [25] Gillies SL, Toivonen PMA. Cooling method influences the postharvest quality of broccoli. *HortScience*. 1995;30(2):313-5.
- [26] Martínez JA, Artés F. Effect of packaging treatments and vacuum-cooling on quality of winter harvested iceberg lettuce. *Food Research International*. 1999;32(9):621-7.
- [27] Ozturk HM, Ozturk HK. Effect of pressure on the vacuum cooling of iceberg lettuce. *International Journal of Refrigeration*. 2009;32(3):402-10.
- [28] Mutlu Ozturk H, Ozturk Harun K, Kocar G. Comparison of Vacuum Cooling with Conventional Cooling for Purslane. *International Journal of Food Engineering* 2011.
- [29] He S-Y, Li Y-F. Experimental study and process parameters analysis on the vacuum cooling of iceberg lettuce. *Energy Conversion and Management*. 2008;49(10):2720-6.

- [30] He SY, Feng GP, Yang HS, Wu Y, Li YF. Effects of pressure reduction rate on quality and ultrastructure of iceberg lettuce after vacuum cooling and storage. *Postharvest Biology and Technology*. 2004;33(3):263-73.
- [31] Alibas I, Koksak N. Forced-air, vacuum, and hydro precooling of cauliflower (*Brassica oleracea* L. var. botrytis cv. Freemont): part I. determination of precooling parameters. *Food Science and Technology*. 2014;34:730-7.
- [32] Alibas I, Koksak N. Forced-air, vacuum, and hydro precooling of cauliflower (*Brassica oleracea* L. var. botrytis cv. Freemont): Part II. Determination of quality parameters during storage. *Food Science and Technology*. 2015;35:45-50.
- [33] Garrido Y, Tudela JA, Gil MI. Comparison of industrial precooling systems for minimally processed baby spinach. *Postharvest Biology and Technology*. 2015;102:1-8.
- [34] Barba FJ, Esteve MJ, Frígola A. Chapter 11 - Bioactive Components from Leaf Vegetable Products. In: Atta ur R, editor. *Studies in Natural Products Chemistry*. Volume 41: Elsevier; 2014. p. 321-46.
- [35] Kris-Etherton PM, Hecker KD, Bonanome A, Coval SM, Binkoski AE, Hilpert KF, et al. Bioactive compounds in foods: their role in the prevention of cardiovascular disease and cancer. *The American Journal of Medicine*. 2002;113(9, Supplement 2):71-88.
- [36] Williams DJ, Edwards D, Hamernig I, Jian L, James AP, Johnson SK, et al. Vegetables containing phytochemicals with potential anti-obesity properties: A review. *Food Research International*. 2013;52(1):323-33.
- [37] Llorach R, Martínez-Sánchez A, Tomás-Barberán FA, Gil MI, Ferreres F. Characterisation of polyphenols and antioxidant properties of five lettuce varieties and escarole. *Food Chemistry*. 2008;108(3):1028-38.
- [38] Pradas-Baena I, Moreno-Rojas JM, Luque de Castro MD. Chapter 1 - Effect of Processing on Active Compounds in Fresh-Cut Vegetables. In: Preedy V,

editor. Processing and Impact on Active Components in Food. San Diego: Academic Press; 2015. p. 3-10.

- [39] Tiwari U, Cummins E. Factors influencing levels of phytochemicals in selected fruit and vegetables during pre- and post-harvest food processing operations. *Food Research International*. 2013;50(2):497-506.
- [40] Zheng H, Fang S, Lou H, Chen Y, Jiang L, Lu H. Neural network prediction of ascorbic acid degradation in green asparagus during thermal treatments. *Expert Systems with Applications*. 2011;38(5):5591-602.
- [41] Kerdpiboon S, Kerr WL, Devahastin S. Neural network prediction of physical property changes of dried carrot as a function of fractal dimension and moisture content. *Food Research International*. 2006;39(10):1110-8.
- [42] Xi J, Xue Y, Xu Y, Shen Y. Artificial neural network modeling and optimization of ultrahigh pressure extraction of green tea polyphenols. *Food Chemistry*. 2013;141(1):320-6.
- [43] Guiné RPF, Barroca MJ, Gonçalves FJ, Alves M, Oliveira S, Mendes M. Artificial neural network modelling of the antioxidant activity and phenolic compounds of bananas submitted to different drying treatments. *Food Chemistry*. 2015;168:454-9.
- [44] Mello LD, Kubota LT. Review of the use of biosensors as analytical tools in the food and drink industries. *Food Chemistry*. 2002;77(2):237-56.
- [45] McGrath MJ, Scanaill CN. *Sensor Technologies: Healthcare, Wellness and Environmental Applications*: Apress; 2013.
- [46] Blasco AJ, Rogerio MC, González MC, Escarpa A. “Electrochemical Index” as a screening method to determine “total polyphenolics” in foods: A proposal. *Analytica Chimica Acta*. 2005;539(1):237-44.
- [47] Pleszczyńska M, Wiater A, Janczarek M, Szczodrak J. (1 → 3)- $\alpha$ -d-Glucan hydrolases in dental biofilm prevention and control: A review. *International Journal of Biological Macromolecules*. 2015;79:761-78.

- [48] Hoyos-Arbeláez J, Vázquez M, Contreras-Calderón J. Electrochemical methods as a tool for determining the antioxidant capacity of food and beverages: A review. *Food Chemistry*. 2017;221(Supplement C):1371-81.
- [49] Scampicchio M, Ballabio D, Arecchi A, Cosio SM, Mannino S. Amperometric electronic tongue for food analysis. *Microchimica Acta*. 2008;163(1):11-21.
- [50] Niamnuy C, Kerdpiboon S, Devahastin S. Artificial neural network modeling of physicochemical changes of shrimp during boiling. *LWT - Food Science and Technology*. 2012;45(1):110-6.
- [51] Motavali A, Najafi GH, Abbasi S, Minaei S, Ghaderi A. Microwave–vacuum drying of sour cherry: comparison of mathematical models and artificial neural networks. *Journal of Food Science and Technology*. 2013;50(4):714-22.
- [52] Poonnoy P, Tansakul A, Chinnan M. Artificial neural network modeling for temperature and moisture content prediction in tomato slices undergoing microwave-vacuum drying. *J Food Sci*. 2007;72(1):E042-7.
- [53] Zhan L, Hu J, Ai Z, Pang L, Li Y, Zhu M. Light exposure during storage preserving soluble sugar and l-ascorbic acid content of minimally processed romaine lettuce (*Lactuca sativa* L.var. *longifolia*). *Food Chemistry*. 2013;136(1):273-8.
- [54] Han J, Gomes-Feitosa CL, Castell-Perez E, Moreira RG, Silva PF. Quality of packaged romaine lettuce hearts exposed to low-dose electron beam irradiation. *LWT - Food Science and Technology*. 2004;37(7):705-15.
- [55] Witham FH, Blaydes DF, Devlin RM. *Experiments in Plant Physiology*: Van Nostrand Reinhold Company; 1971.
- [56] Pawelzik E. *Workshop on the nutritional quality and phytochemicals of tropical and sub-tropical fruits*. Chiang Mai: Postharvest Technology Institute; 2005.

- [57] Singleton VL, Orthofer R, Lamuela-Raventós RM. [14] Analysis of total phenols and other oxidation substrates and antioxidants by means of folin-ciocalteu reagent. *Methods in Enzymology*. 299: Academic Press; 1999. p. 152-78.
- [58] Ranganna S. *Handbook of Analysis and Quality Control for Fruit and Vegetable Products*: Tata McGraw-Hill; 1986.
- [59] Khanam UKS, Oba S, Yanase E, Murakami Y. Phenolic acids, flavonoids and total antioxidant capacity of selected leafy vegetables. *Journal of Functional Foods*. 2012;4(4):979-87.
- [60] Zhang L, Yao J, Zhang Y, Liao X, Chen F, Hu X. Microstructural and morphological behaviors of asparagus lettuce cells subject to high pressure processing. *Food Research International*. 2015;71(Supplement C):174-83.
- [61] Brand-Williams W, Cuvelier ME, Berset C. Use of a free radical method to evaluate antioxidant activity. *LWT - Food Science and Technology*. 1995;28(1):25-30.
- [62] Barger WR. *Factors Affecting Temperature Reduction and Weight-loss in Vacuum-cooled Lettuce*: U.S. Department of Agriculture, Marketing Quality Research Division, Agricultural Marketing Service; 1961.
- [63] Tiryaki S, Özşahin Ş, Yıldırım İ. Comparison of artificial neural network and multiple linear regression models to predict optimum bonding strength of heat treated woods. *International Journal of Adhesion and Adhesives*. 2014;55:29-36.
- [64] Tiryaki S, Aydın A. An artificial neural network model for predicting compression strength of heat treated woods and comparison with a multiple linear regression model. *Construction and Building Materials*. 2014;62:102-8.
- [65] Mata J. Interpretation of concrete dam behaviour with artificial neural network and multiple linear regression models. *Engineering Structures*. 2011;33(3):903-10.

- [66] Sousa SIV, Martins FG, Alvim-Ferraz MCM, Pereira MC. Multiple linear regression and artificial neural networks based on principal components to predict ozone concentrations. *Environmental Modelling & Software*. 2007;22(1):97-103.
- [67] Piloto-Rodríguez R, Sánchez-Borroto Y, Lapuerta M, Goyos-Pérez L, Verhelst S. Prediction of the cetane number of biodiesel using artificial neural networks and multiple linear regression. *Energy Conversion and Management*. 2013;65:255-61.
- [68] Alibas I, Okursoy R. Determination of Quality Parameters during Air Blast, Vacuum and Hydro Pre-cooling of Artichoke under the Storage Conditions 2016. 480-91 p.
- [69] Wilbert FS. THE REFRIGERATION AND FREEZING OF FOOD. 1998. In: *Industrial Refrigeration Handbook* [Internet]. McGraw Hill Professional, Access Engineering. Available from: <https://www.accessengineeringlibrary.com:443/browse/industrial-refrigeration-handbook/p2000aed69970567001>
- [70] Thompson JF, Chen YL. Comparative energy use of vacuum, hydro, and forced air coolers for fruits and vegetables. *ASHRAE Transactions*. 1988;92:1427-33.
- [71] Tian D, Fen L, Jiangang L, Mengli K, Jingfen Y, Xingqian Y, et al. Comparison of different cooling methods for extending shelf life of postharvest broccoli. *International Journal of Agricultural and Biological Engineering*. 2016;9(6):178.
- [72] Rennie TJ, Vigneault C, Raghavan GSV, DeEll JR. Effects of pressure reduction rate on vacuum cooled lettuce quality during storage. *Canadian Biosystems Engineering*. 2001;43:3-39.
- [73] Kays SJ. *Postharvest physiology and handling of perishable plant products*: Van Nostrand Reinhold Inc.; 1991.



- [74] Wilson LG, Boyette MD, Estes EA. Postharvest handling and cooling of fresh fruits, vegetables and flowers for small farms. Part I: Quality Maintenance North Carolina State University. 1999.
- [75] Toole GA, Parker ML, Smith AC, Waldron KW. Mechanical properties of lettuce. *Journal of materials science*. 2000;35(14):3553-9.
- [76] Martín-Diana AB, Rico D, Frías J, Henehan GTM, Mulcahy J, Barat JM, et al. Effect of calcium lactate and heat-shock on texture in fresh-cut lettuce during storage. *Journal of Food Engineering*. 2006;77(4):1069-77.
- [77] Salgado SP, Pearlstein AJ, Luo Y, Feng H. Quality of Iceberg (*Lactuca sativa* L.) and Romaine (*L. sativa* L. var. *longifolia*) lettuce treated by combinations of sanitizer, surfactant, and ultrasound. *LWT - Food Science and Technology*. 2014;56(2):261-8.
- [78] Rico D, Martín-Diana AB, Barry-Ryan C, Frías JM, Henehan GTM, Barat JM. Optimisation of steamer jet-injection to extend the shelflife of fresh-cut lettuce. *Postharvest biology and technology*. 2008;48(3):431-42.
- [79] Baur S, Klaiber R, Hammes WP, Carle R. Sensory and microbiological quality of shredded, packaged iceberg lettuce as affected by pre-washing procedures with chlorinated and ozonated water. Germany, 13–14 March, 2003 (Baur & Carle, 2003). *Innovative Food Science & Emerging Technologies*. 2004;5(1):45-55.
- [80] Fan X, Toivonen PMA, Rajkowski KT, Sokorai KJB. Warm Water Treatment in Combination with Modified Atmosphere Packaging Reduces Undesirable Effects of Irradiation on the Quality of Fresh-Cut Iceberg Lettuce. *Journal of Agricultural and Food Chemistry*. 2003;51(5):1231-6.
- [81] Rogers G. VG08148 (completed February 2012). 2012.
- [82] Barrett DM, Beaulieu JC, Shewfelt R. Color, Flavor, Texture, and Nutritional Quality of Fresh-Cut Fruits and Vegetables: Desirable Levels, Instrumental and Sensory Measurement, and the Effects of Processing. *Critical Reviews in Food Science and Nutrition*. 2010;50(5):369-89.

- [83] Zechmann B, Müller M, Zellnig G. Membrane associated qualitative differences in cell ultrastructure of chemically and high pressure cryofixed plant cells. *Journal of structural biology*. 2007;158(3):370-7.
- [84] Tigre RC, Pereira EC, Da Silva NH, Vicente C, Legaz ME. Potential phenolic bioherbicides from *Cladonia verticillaris* produce ultrastructural changes in *Lactuca sativa* seedlings. *South African Journal of Botany*. 2015;98:16-25.
- [85] Gunning BES, Steer MW. *Plant Cell Biology: Structure and Function*: Jones and Bartlett Publishers; 1996.
- [86] Wagstaff C, Clarkson GJJ, Rothwell SD, Page A, Taylor G, Dixon MS. Characterisation of cell death in bagged baby salad leaves. *Postharvest Biology and Technology*. 2007;46(2):150-9.
- [87] Staehelin LA. Chloroplast structure: from chlorophyll granules to supra-molecular architecture of thylakoid membranes. *Photosynthesis research*. 2003;76(1-3):185-96.
- [88] Wagstaff C, Clarkson GJJ, Zhang F, Rothwell SD, Fry SC, Taylor G, et al. Modification of cell wall properties in lettuce improves shelf life. *Journal of experimental botany*. 2010;61(4):1239-48.
- [89] Lichtenthaler HK. Plastoglobuli, thylakoids, chloroplast structure and development of plastids. *Plastid Development in Leaves during Growth and Senescence*: Springer; 2013. p. 337-61.
- [90] Złotek U, Świeca M, Jakubczyk A. Effect of abiotic elicitation on main health-promoting compounds, antioxidant activity and commercial quality of butter lettuce (*Lactuca sativa* L.). *Food Chemistry*. 2014;148:253-60.
- [91] Kim MJ, Moon Y, Tou JC, Mou B, Waterland NL. Nutritional value, bioactive compounds and health benefits of lettuce (*Lactuca sativa* L.). *Journal of Food Composition and Analysis*. 2016;49:19-34.
- [92] DeEll J, Prange R, Peppelenbos H. *Postharvest physiology of fresh fruits and vegetables* 2010.

- [93] Zhan L, Hu J, Ai Z, Pang L, Li Y, Zhu M. Light exposure during storage preserving soluble sugar and L-ascorbic acid content of minimally processed romaine lettuce (*Lactuca sativa* L. var. *longifolia*). *Food chemistry*. 2013;136(1):273-8.
- [94] Viacava GE, Goyeneche R, Goñi MG, Roura SI, Agüero MV. Natural elicitors as preharvest treatments to improve postharvest quality of Butterhead lettuce. *Scientia Horticulturae*. 2018;228:145-52.
- [95] Edziri HL, Smach MA, Ammar S, Mahjoub MA, Mighri Z, Aouni M, et al. Antioxidant, antibacterial, and antiviral effects of *Lactuca sativa* extracts. *Industrial Crops and Products*. 2011;34(1):1182-5.
- [96] Lee SK, Kader AA. Preharvest and postharvest factors influencing vitamin C content of horticultural crops. *Postharvest biology and technology*. 2000;20(3):207-20.
- [97] Gao J, Si Y, Zhu Y, Luo F, Yan S. Temperature abuse timing affects the rate of quality deterioration of postharvest broccoli during different pre-storage stages. *Scientia Horticulturae*. 2018;227:207-12.
- [98] Vina SZ, Chaves AR. Antioxidant responses in minimally processed celery during refrigerated storage. *Food Chemistry*. 2006;94(1):68-74.
- [99] Llorach R, Tomás-Barberán FA, Ferreres F. Lettuce and chicory byproducts as a source of antioxidant phenolic extracts. *Journal of Agricultural and Food Chemistry*. 2004;52(16):5109-16.
- [100] Nicolle C, Carnat A, Fraisse D, Lamaison JL, Rock E, Michel H, et al. Characterisation and variation of antioxidant micronutrients in lettuce (*Lactuca sativa* folium). *Journal of the Science of Food and Agriculture*. 2004;84(15):2061-9.
- [101] Simić A, Manojlović D, Šegan D, Todorović M. Electrochemical Behavior and Antioxidant and Prooxidant Activity of Natural Phenolics. *Molecules*. 2007;12(10).

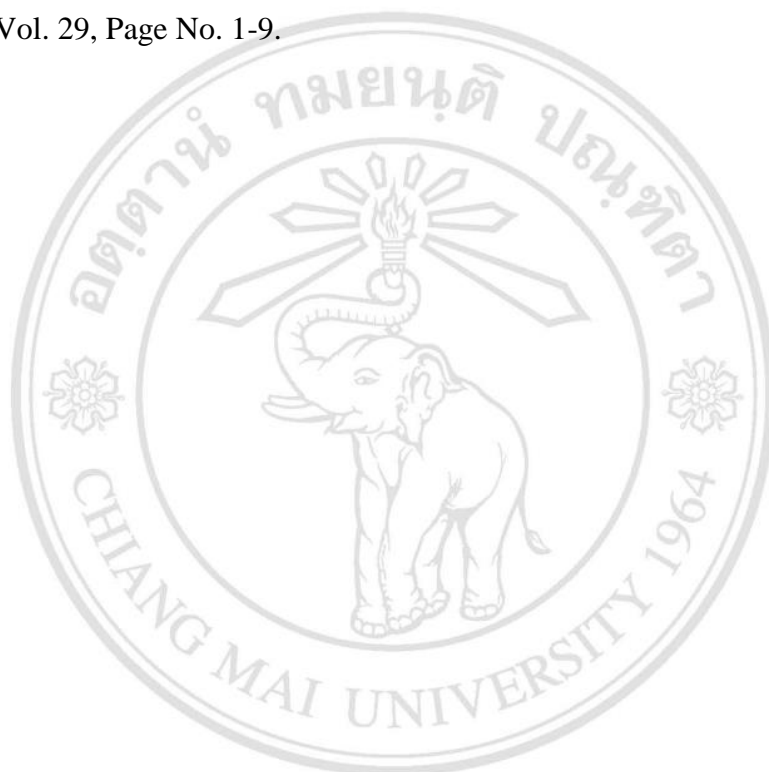
- [102] De Torres C, Díaz-Maroto MC, Hermosín-Gutiérrez I, Pérez-Coello MS. Effect of freeze-drying and oven-drying on volatiles and phenolics composition of grape skin. *Analytica Chimica Acta*. 2010;660(1):177-82.
- [103] Paes J, Dotta R, Barbero GF, Martínez J. Extraction of phenolic compounds and anthocyanins from blueberry (*Vaccinium myrtillus* L.) residues using supercritical CO<sub>2</sub> and pressurized liquids. *The Journal of Supercritical Fluids*. 2014;95:8-16.
- [104] Chaisuksant R, Damwan K, Poolkasem A. Simple electrochemical methods for antioxidant capacity test 2012. 297-302 p.
- [105] Milardović S, Iveković D, Grabarić BS. A novel amperometric method for antioxidant activity determination using DPPH free radical. *Bioelectrochemistry*. 2006;68(2):175-80.
- [106] Planinić M, Aliakbarian B, Perego P, Greganic K, Tomas S, Bucić-Kojić A. Influence of Temperature and Drying Time on Extraction Yield of Phenolic Compounds from Grape Pomace Variety "Portogizac" 2015. 343-50 p.



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่  
Copyright© by Chiang Mai University  
All rights reserved

## LIST OF PUBLICATIONS

- 1) Pratsanee Kongwong, Ksenia Morozova, Giovanna Ferrentino, Pichaya Poonlarp and Matteo Scampicchio, “Rapid Determination of the Antioxidant Capacity of Lettuce by an e-Tongue based on Flow Injection Coulometry”, *Electroanalysis* 2017, Vol. 29, Page No. 1-9.



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่  
Copyright© by Chiang Mai University  
All rights reserved