

DAFTAR PUSTAKA

- Alarcon-Alonso J, Zamilpa A, Aguilar FA, Herrera-Ruiz M, Tortoriello J, and Jimenez-Ferrer E. 2012. *Pharmacological Characterization of The Diuretic Effect of Hibiscus sabdariffa linn (Malvaceae) Extract*. J Ethnopharmacol 139:751–6.
- Anal AK. 2010. *Microencapsulation And Application In Delivery Of Bioactives In Foods*. Innovative Science: Agriculture And Food Edition: 34-40.
- Anonim. 1995. *Association of Official Analytical Chemist Official Methods on Analysis*. 18th Ed. Gaithersburg. Maryland.
- Azevedo MA, Bourbon AI, Vicente AA, and Cerqueira MA. 2014. *Alginate/Chitosan Nanoparticles for Encapsulation and Controlled Release of Vitamin B2*. International J Biological Macromolecules 71:141-146.
- Bahreini E, Aghaiypour K, Abbasalipourkabir R, Mokarram AR, Goodarzi MT, and Saidijam M. 2014. *Preparation and Nanoencapsulation of L-asparaginase II in Chitosan-Tripolyphosphate Nanoparticles and In Vitro Release Study*. Nanoscale Research Letters 9:340.
- Bakowska AM and Kolodziejczyk PP. 2011. *Black Currant Polyphenols: Their Storage Stability and Microencapsulation*. Industrial Crops and Products 34:1301-1309.
- Bakowska AM, Kucharska AZ, and Oszmianski J. 2003. *The Effects of Heating, UV Irradiation and Storage on Stability of Anthocyanin-Polyphenol Copigment Complex*. Food Chemistry 81:349–355.
- Beirao-da-Costa S, Duarte C, Bourbon AI, Pinheiro AC, Januario MIN, Vicente AA, Beirao-da-Costa ML, and Delgadillo I. 2013. *Inulin Potential for Encapsulation and Controlled Delivery of Oregano Essential Oil*. Food Hydrocolloids 33:199-206.
- Bhumkar, D.R and Pokharkar V.B. 2006. *Studies on Effect of pH on Crosslinking of Chitosan with Natrium Tripolyphosphate: A Technical Note*. AAPS Pharm SeciTech 7:2.
- Bhusari SN, Muzaffar K, and Kumar P. 2014. *Effect of Carrier Agents on Physical and Microstructural Properties of Spray Dried Tamarind Pulp Powder*. Powder Technology 266:354-364.

- Brouillard R. 1982. *Chemical Structure of Anthocyanins*. In: Markakis, P *Anthocyanin As Food Colorants* p 1-37. Academic Press. New York.
- Buffo R, and Reineccius GA. 2000. *Optimization of Gum Acacia/Modifiedstarches/Maltodextrin Blends for The Spray Drying of Flavours*. *Perfumer and Flavorist* 25:45–53.
- Cai Y, and Corke H. 2000. *Production And Properties Of Spray Dried Amaranthus Betacyanin Pigments*. *J Food Science* 65(6):1248–1252.
- Caliskan G and Dirim SN. 2013. *The Effects of The Different Drying Conditions and The Amounts of Maltodextrin Addition during Spray Drying of Sumac Extract*. *Food and Bioproducts Processing* 91:539-548.
- Carvajal-Quintanilla MX, Camacho-Diaz BH, Meraz-Torres LS, Chanona-Perez JJ, Alamilla-Beltran L, Jimenez-Aparicio A, and Gutierrez-Lopez GF. 2010. *Nanoencapsulation: A New Trend in Food Engineering Processing*. *Food Eng Rev* 2: 39-50.
- Compaore CS, Nielsen DS, Ouoba LI, Berner TS, Nielsen KF, and Sawadogo-Linganih. 2013. *Co-Production of Surfactin and A Novel Bacteriocin by Bacillus subtilissubsp. Subtilis H4 Isolated from Bikalga, An African Alkaline Hibiscus Sabdariffaseed Fermented Condiment*. *Int J Food Microbiology* 162:297–307.
- Cai YZ, and Corke H, 2000. *Production and Properties of Spray-dried Amaranthus Betacyanin Pigments*. *J Food Science*. 65:1248–1252.
- Canovas GVB, Rivas EO, and Juliano P. 2005. *Food Powders*. Kluwer Academic. New York.
- Carvajal-Zarrabal O, Hayward PM, Orta-Flores Z, Nolasco C, and Barradas DM, Aguilar-Uscanga MG. 2013. *Effect of Hibiscus sabdariffa L. Dried Calyx Ethanol Extract on Fat Absorption-Excretion, and Body Weightimplication in Rats*. *J Biomedical Biotechnology* 10.1155/2009/923945.
- Cerdeira M, Martini S, and Herrera ML. 2005. *Microencapsulating Properties of Trehalose and of Its Blends with Sucrose and Lactose*. *J Food Science* 70(6):401-408.
- Chuah AM, Kuroiwa T, Ichikawa S, Kobayashi I, and Nakajima M. 2009. *Formation of Biocompatible Nanoparticles via The Self-Assembly of Chitosan and Modified Lechitin*. *J Food Science* 74(1): N1-N8.

- Burgos G, Amoros W, Munoa L, Sosa P, Cayhualla E, Sanchez C, Diaz C, and Bonierbale M. 2013. *Total Phenolic, Total Anthocyanin and Phenolic Acid Concentrations and Antioxidant Activity of Purple-Fleshed Potatoes as Affected by Boiling*. J Food Composition and Analysis 30:6-12.
- Cisse M, Vaillant F, Acosta O, Dhuique-Mayer C, and Dornier M. 2009. *Thermal Degradation Kinetics of Anthocyanins from Blood Orange, Blackberry, and Roselle Using The Arrhenius, Eyring, and Ball Models*. J Agricultural and Food Chemistry 57(14):6285–6291
- DeMan. 1997. *Kimia Makanan*. Diterjemahkan oleh Padmawinata K. ITB Press. Bandung.
- Desorby S, Netto FM, and Labuza TP. 1997. *Comparison of Spray Drying, Drum Drying, and Freeze Drying for β -Carotene Encapsulation and Preservation*. J of Food Science 62: 1158-1162.
- Dubey R, Tsami TC, and Rao B. 2009. *Microencapsulation Technology and Preparation*. J Devence Science 59(1): 82-95.
- Dziezak JD. 1998. *Microencapsulation and Encapsulated Food Ingredients*. Food Technology 42:136-151
- Elbe JHV and Schwartz TJ. 1996. *Colorants*. In: *Fennema, O. R. Food Chemistry*. Third Edition p 651-722. Marcell Dekker. New York.
- Ersus S and Yurdagel U. 2007. *Microencapsulation of Anthocyanin Pigments of Black Carrot (Daucus Carota L.) by Spray Drier*. J Food Engineering 80:805–812.
- Fang C and Bhandari B. 2012. *Comparing The Efficiency of Protein and Maltodekstrin on Spray Drying of Bayberry Juice*. Food Research International 48:478-483.
- Fernandes RVB, Borges SV, and Botrel DA. 2014. *Gum Arabic/Starch/Maltodextrin/Inulin as Wall Materials on The Microencapsulation of Rosemary Essential Oil*. Carbohydrate Polymers 101: 524-532.
- Fernandez-Arroyo S, Rodriguez-Medina IC, Beltran-Debon R, Pasini F, Joven J, Micol V, Segura-Carretero A, and Gutierrez-Fernando A. 2011. *Quantification of the Polyphenolic Fraction and In Vitro Antioxidant and In Vivo Anti-Hyperlipemic Activities of Hibiscus sabdariffa Aqueous Extract*. Food Research International 44:1490-1495.

- Francis FJ. 1999. *Amaranthus Betacyanin Pigments Applied in Model Food Sistem*. J Food Science 64 (5): 869-873.
- Garzón GA and Wrolstad RE. 2001. *The Stability of Pelargonidin-Based Anthocyanins at Varying Water Activity*. Food Chemistry:75(2):185–196.
- Gharsallaoui A, Roudat G, Chambin O, Voilley A, and Saurel R. 2007. *Application of Spray Drying in Microencapsulation of Food Ingredients: An Overview*. Food Research International 40:1107-1121.
- Gibbs BF, Kermasha S, Alli I., and Mulligan CN. 1999. *Encapsulation in The Food Industry: A Review*. Int J Food Science and Nutrition 50:213–224.
- Giusti MM and Wrolstad RE. 2001. *Characterization and Measurement of Anthocyanins by UV-Visible Spectroscopy*. Oregon State University. Oregon.
- Glibowski P, and Pikus S. 2011. *Amorphous and Crystal Inulin Behavior in A Water Environment*. Carbohydrate Polymers 83:635–639.
- Greiner, R. 2009. *Current and Projected Application of Nanotechnology in the Food sector*. J Brazillian Society in Food and Nutrition, 34(1):243-260.
- Gutierrez MGR, Guerra CAA, Ramoz AQ, Anchondo TJR, Uribe JAG, Gonzales JGB, Gutierrez DL, and Venegas KC. *Effect of Soluble Fiber on the Physicochemical Properties of Cactus Pear (Opuntia ficus indica) Encapsulated Using Spray Drying*. J of Food Science and Biotechnology 23(3):755-763.
- Han X, Shen T, and Lou H. 2007. *Dietary Polyphenols and Their Biological Significance*. Int J Molecular Science 8:950–988.
- Hariono M, Akbar MF, Sularsih I, Najihah L, Purwadi S, and Nugrahani AW. 2009. *Extraction, Identification and Acetylation of Inulin from Dahlia Tuber (Dahlia Pinata Cav.)*. The 9th National Symposium On Polymeric Materials 2009 (NSPM 2009).
- Harmayani E, Winarti S, and Rudi N. 2011. *Preparation of Inulin Powder from Dioscorea esculenta Tuber with Foam mat Drying Method*. The 12th Asean Food Conference. Bitec Bangna. Bangkok. Thailand.
- Harris R, Lecumberri E, Aparicio IM, Mengibar M, and Heras A. 2010. *Chitosan Nanoparticles and Microspheres for the Encapsulation of Natural Antioxidants Extracted from Ilex paraguariensis*. Carbohydrate Polymers 84(2): 803-806.

- Iglesias I, Echeverria G, and Soria Y. 2008. *Differences in Fruit Colour Development, Anthocyanin Content, Fruit Quality, and Consumer Acceptability of Eight "Gala" Apple Strains*. *Scientia Horticulturae* 7:3014-3022.
- Jackman RL and Smith JL. 1996. *Anthocyanins and Betalains*. Di dalam: Hendry GAF and Houghton JD (eds.). *Natural Food Colorants 2*. Blackie Academic and Professional. London.
- Jung E, Kim Y, and Joo N. 2013. *Physicochemical Properties and Antimicrobial Activity of Roselle (Hibiscus Sabdariffa L.)*. *J Science and Food Agriculture* 10.1002/jsfa.6256.
- Kennedy JF, Knill CJ, and Tailor DW. 1995. *Maltodekstrins. di Dalam: Kearsley MW and Diedzic SZ (Eds.). Handbook of Starch Hydrolysis Product and Their Derivatives*. Blackie Academics and Profesional. London.
- Kong JM, Chia LS, Goh NK, Chuia TF, and Brouillard R. 2003. *Analysis and Biological Activities of Anthocyanins*. *J Phytochemistry* 64: 923-933.
- Krishnan S, Krishirsagar AC, and Singhal S. 2005. *The Use of Gum Arabic and Modified Starch in The Microencapsulation of Food Flavor Agent*. *Carbohydrate Polymers* 62:309–315.
- Kumar MR. 2000. *A Review of Chitin and Chitosan Applications*. *Reactive and Functional Polymers* 46:1-27.
- Kumari A, Yadav SK, Pakade YB, Singh B, and Yadav SC. 2010. *Development of Biodegradable nanoparticles for Delivery of Quercetin*. *Colloids and Surfaces B Biointerfaces* 80(2):184-92.
- Liu FF, Ang CYW, and Springer D. 2000. *Optimization of Extractions for Active Components in Hypericum perforatum Using Response Surface Methodology*. *J Agriculture and Food Chemistry* 48:3364–3371.
- Liu Y and Cao X. 2004. *Study on Microencapsulation of Anthocyanins*. *J Food Science and Technology*.
- Maganha EG, Halmenschlager RD, Rosa RM, Henriques JAP, Ramos A and Saffi J. 2010. *Pharmacological Evidences for The Extracts and Secondary Metabolites from Plants of The Genus Hibiscus*. *Food Chemistry* 118(1):1–10.
- Mateus N and Freitas VD. 2009. *Anthocyanins as Food Colorants*. Springer Science Business Media, LLC. Porto.

- Mohamed R, Fernandez J, Pineda M, and Aguilar M. 2007. *Roselle (Hibiscus sabdariffa) Seed Oil is a Rich Source Of Gamma-Tocopherol*. J Food Science:72(3):S207–S211.
- Mohd-Esa N, Hern FS, Ismail A, and Yee CL. 2010. *Antioxidant Activity in Different Parts of Roselle (Hibiscus Sabdariffa L.) Extracts and Potential Exploitation of The Seeds*. Food Chemistry 122(4):1055–1060.
- Molyneux P. 2004. *The Use of The Stable Free Radical Diphenil-Picryl Hydrazil (DPPH) for Estimate Antioxidant activity*. J Science and technology 26(2):211-219.
- Neto CC. 2007. *Cranberry and Blueberry: Evidence for Protective Effects Against Cancer and Vascular Diseases*. Mol. Nutr. Food Research 51:652–664.
- Nollet LML. 2000. *Food Analysis by HPLC (2nd Ed.)*. Marcel Dekker. New York.
- Okuyama K, Abdullah M, Lenggoro IW, and Iskandar F. 2006. *Preparation of Functional Nanostructured Particles by Spray Drying*. Advance Powder Technology 17(6): 587-611.
- Onwulata, C. 2005. *Encapsulated and Powdered Food*. Food Science and Technology. Taylor & Francis Group. USA.
- Ovando AC, Hernández MLP, Hernández MEP, Rodríguez JA, and Vidal CAG. 2009. *Chemical Studies of Anthocyanins: A Review*. Food Chemistry 113:859-871.
- Palma M, Garcia P, Marquez-Ruiz G, Vergara C, and Robert P. 2014. *Release Kinetics of Flavonoids in Methyl Linoleate from Microparticles Designed with Inulin and Channelizing Agent*. Food Research International 64:99-105.
- Parize AL, Rozone de Souza TC, Brighente IMC, Favere VT, Laranjeira MCM, Spinelli A, and Longo E. 2008. *Microencapsulation of the natural urucum pigment with chitosan by spray drying in different solvents*. African Journal of Biotechnology 7(17) : 3107-3114.
- Peng CH, Chyau CC, Chan KC, Chan TH, Wang CJ, and Huang CN. 2011. *Hibiscus Sabdariffa polyphenolic Extract Inhibits Hyperglycemia, Hyperlipidemia, and Glycation-Oxidative Stress while Improving Insulin Resistance*. J Agriculture and Food Chemistry 59:9901–9.

- Ramos S. 2008. *Cancer Chemoprevention and Chemotherapy: Dietary Polyphenols and Signalling Pathways*. Mol Nutr Food Research 52:507–526.
- Roberfroid M. 2005. *Inulin-Type Fructans: Functional Food Ingredients*. CRC Press. Florida.
- Robert P, Garcia P, Reyes N, Chavez J, and Santos J. 2012. *Acetylated Starch and Inulin as Encapsulating Agents of Gallic Acid and Their Release Behaviour in a Hydrophilic System*. Food Chemistry 134:1-8.
- Ronkart SN, Deroanne C, Paquot M, Fougnes C, Lambrechts JC, and Blecker CS. 2007. *Characterization of The Physical State of Spray-Dried Inulin*. Food Biophysics 2:83-92.
- Ronkart SN, Paquot M, Blecker CS, Fougnes C, Doran L, and Lambrechts JC. 2009. *Impact of The Crystallinity on The Physical Properties of Inulin during Water Sorption*. Food Biophysics 4:49-58.
- Robert P, García P, Reyes N, Chávez J, and Santos J. 2012. *Acetylated Starch and Inulin as Encapsulating Agents of Gallic Acid and Their Release Behaviour in Ahydrophilic System*. Food Chemistry 134:1–8.
- Sáenz C, Tapia S, Chavez J, and Robert P. 2009. *Microencapsulation by Spray Drying of Bioactive Compounds from Cactus Pear (Opuntia ficus-indica)*. Food Chemistry 114:616–622.
- Sabzghabae AM, Ataei E, Kelishadi R, Ghannadi A, Soltani R, and Badri S. 2013. *Effect of Hibiscus Sabdariffa Calices on Dyslipidemia in Obese Adolescents: A Triple-Masked Randomized Controlled Trial*. Mat Soc Med 25:76–9.
- Saloko S, Darmadji P, Setiaji P, and Pranoto Y. 2012. *Structural Analysis of Spray-Dried Coconut Shell Liquid Smoke Powder*. Journal Teknologi dan Industri Pangan 23(2): 173-179.
- Sawasod N, Charinpanitkul T, and Tanthapanichakoon W. 2006. *Nanoencapsulation of Curcumin in Biodegradable Chitosan via Multiple Emulsion/Solvent Evaporation*. The Fourth Thailand Materials Science Technology Conference.
- Schrooyen PMM, van der Meer R, and De Kruif CG. 2001. *Microencapsulation: Its Application in Nutrition*. Proceeding of The Nutrition Society 60:475-479.

- Senter SD, Robertson JA, and Merdith FI. 1989. *Phenolic Compound of The Mesocarp of Cresthaven Peaches during Storage and Ripening*. J Food Science 54:1259-1268.
- Shahidi F, and Han XQ. 1993. *Encapsulation of Food Ingredients*. Crit. Rev. Food Science and Nutrition. 33:501–547.
- Silva PI, Stringheta PC, Teofilo RF, and Oliveira IRN. 2013. *Parameter Optimization for Spray Drying Microencapsulation of Jaboticaba (Myrciaria jaboticaba) Peel Extracts using Simultaneous Analysis of Responses*. J of Food Engineering 117:538-544.
- Silva-Weiss A, Bifani V, Ihl M, Sobral PJA, and Gomez-Guillen MC. 2013. *Structural properties of films and rheology of film-forming solutions based on chitosan and chitosan-starch blend enriched with murta leaf extract*. Food Hydrocolloids 31: 458-466.
- Sindi HA, Marshall LJ, and Morgan MRA. 2014. *Comparative Chemical and Biochemical Analysis of Extracts of Hibiscus Sabdariffa*. Food Chemistry 164: 23-29.
- SNI 01-2593. 1992. *Bagian Yang Larut Dalam Air Dingin*. Jakarta.
- Soloway S and Wilen SH. 1952. *Improved Ferric Chloride Test for Phenols*. Analytical Chemistry. 24(6): 979-983.
- Soobrattee MA, Bahorun T, and Aruom OI. 2006. *Chemopreventive Actions of Polyphenolic Compounds in Cancer*. Biofactors 27:19–35.
- Sormoli ME, Islam MI, and Langrish TAG. 2012. *The Effect of Chitosan Hydrogen Bonding on Lactose Crystallinity During Spray Drying*. J Food Engineering, 108(4):541-548.
- Souza VB, Thomazini M, Balieiro JCC, and Favaro-Trindade CSF. *Effect of Spray Drying on The Physicochemical Properties and Color Stability of The Powdered Pigment Obtained from Vinification Byproducts of The Bordo Grape (Vitis labrusca)*. Food and Bioproducts Processing 93:39-50.
- Sugita P, Sjahriza A, and Wahyono D. 2006. *Sintesis dan optimasi gel kitosan-alginat*. J Sains dan Teknologi 8: 133-137.
- Sun-Waterhouse D, Wadhwa SS, and Waterhouse GIN. 2013. *Spray-Drying Microencapsulation of Polyphenol Bioactives: A Comparative Study Using Different Natural Fibre Polymers as Encapsulants*. Food Bioprocess Technol 6:2376–2388.

- Toneli JTCL, Park KJ, Ramalho JRP, Murr FEX and Fabbro IMD. 2008. *Rheological characterization of chicory root (Cichorium intybus L.) inulin solution*. Brazilian J of Chemical Engineering 25(03): 461-471.
- Tonon RV, Baroni AF, Brabet C, Gibert O, Pallet D, and Hubinger MD. 2009. *Water Sorption and Glass Transition Temperature of Spray Dried Açai (Euterpe Oleracea Mart.) Juice*. J Food Engineering 94(3-4):215-221.
- Tonon R, Brabet C, and Hubinger D. 2010. *Anthocyanin Stability and Antioxidant Activity of Spray-Dried Acai [Euterpe Oleracea Mart.] Juice Produced with Different Carrier Agents*. Food Research International 43:907-914.
- Tsai ML, Chen RH, Bai SW, and Chen WY. 2011. *The storage stability of chitosan/ tripolyphosphate nanoparticles in phosphate buffer*. Carbohydrate Polymers 84: 756-761.
- Wagner L and Warthesen J. 1995. *Stability of Spray-Dried Encapsulated Carrot Carotenes*. J Food Science 60(5):1048-1053.
- Wandrey C, Bartkowiak A, and Harding SE. 2010. *Materials for Encapsulation*. In *Encapsulation Technologies for Active Food Ingredients and Food Processing*. Zuidam NJ and Nedovic VA (Eds.). Springer New York Dordrecht Heidelberg London. pp. 31-100.
- Wang Y, Lu ZX, and Bie XM. 2009. *Study on Microencapsulation of Curcumin Pigments by Spray Drying*. European Food Research and Technology 229(3):391-396.
- Weiss J, Decker EA, and McClements DJ. 2008. *Solid Lipid Nanoparticles as delivery System for Bioactive Food Components*. Food Biophysics 3:146-154.
- Wrolstad RE. 2004. *Anthocyanin Pigments – Bioactivity And Coloring Properties*. J Food Science 69(5):419-421.