

BIBLIOGRAPHY

- Abdel-shafi, S., Al-Mohammadi, Abdul-Raouf Sitohy, M., Mosa, B., Ismaiel, A., Enan, G., & Osman, A. (2019). Antimicrobial Activity and Chemical Constitution of the Crude, Phenolic-Rich Extracts of *Hibiscus sabdariffa*, Brassica oleracea and Beta vulgaris. *Molecules (Basel, Switzerland)*, 24, 1–17. doi:10.3390/molecules24234280
- Achir, N., Sinela, A., Mertz, C., Fulcrand, H., & Dornier, M. (2019). Monitoring anthocyanin degradation in *Hibiscus sabdariffa* extracts with multi-curve resolution on spectral measurement during storage. *Food Chemistry*, 271(April 2018), 536–542. <https://doi.org/10.1016/j.foodchem.2018.07.209>
- Ademiluyi, A. O., & Oboh, G. (2013). Aqueous extracts of roselle (*Hibiscus sabdariffa* Linn.) varieties inhibit α -amylase and α -glucosidase activities in vitro. *Journal of Medicinal Food*, 16(1), 88–93. <https://doi.org/10.1089/jmf.2012.0004>
- Adeola, O., Batista, C. M. D. ., & Fungwe, T. V. (2019). The Effectiveness of *Hibiscus sabdariffa* for Improving Metabolic Syndrome: A Systematic Review. *EC Nutrition*, 10, 887–892.
- Aishah, B., Nursabrina, M., Noriham, A., Norizzah, A. R., & Mohamad Shahrini, H. (2013). Anthocyanins from *Hibiscus sabdariffa*, melastoma Malabathricum and Ipomoea batatas and its color properties. *International Food Research Journal*, 20(2), 827–834.
- Ajiboye, T. O., Salawu, N. A., Yakubu, M. T., Oladiji, A. T., Akanji, M. A., & Okogun, J. I. (2011). Antioxidant and drug detoxification potentials of *Hibiscus sabdariffa* anthocyanin extract. *Drug and Chemical Toxicology*, 34(2), 109–115. <https://doi.org/10.3109/01480545.2010.536767>
- Alam, G., Sartini, & Alfath, A. (2019). Comparison of microwave assisted extraction (MAE) with variations of power and infusion extraction method on antibacterial activity of rosella calyx extract (*Hibiscus sabdariffa*). *Journal of Physics: Conference Series*, 1341(7). <https://doi.org/10.1088/1742-6596/1341/7/072002>
- Alara, Oluwaseun R., Abdurahman, N. H., Obanijesu, E. O., Alara, J. A., & Abdul Mudalip, S. K. (2019). Extract-rich in flavonoids from *Hibiscus sabdariffa* calyces: Optimizing microwave-assisted extraction method and characterization through LC-Q-TOF-MS analysis. *Journal of Food Process Engineering*, 43(2). <https://doi.org/10.1111/jfpe.13339>
- Alara, Oluwaseun Ruth, & Abdurahman, N. H. (2019). Microwave-assisted extraction of phenolics from *Hibiscus sabdariffa* calyces: Kinetic modelling and process intensification. *Industrial Crops and Products*, 137(February), 528–535. <https://doi.org/10.1016/j.indcrop.2019.05.053>

- Alarcón-Alonso, J., Zamilpa, A., Aguilar, F. A., Herrera-Ruiz, M., Tortoriello, J., & Jimenez-Ferrer, E. (2012). Pharmacological characterization of the diuretic effect of *Hibiscus sabdariffa* Linn (Malvaceae) extract. *Journal of Ethnopharmacology*, 139(3), 751–756. <https://doi.org/10.1016/j.jep.2011.12.005>
- Alegbe, E. O., Teralı, K., Olofinsan, K. A., Surgun, S., Ogbaga, C. C., & Ajiboye, T. O. (2019). Antidiabetic activity-guided isolation of gallic and protocatechuic acids from *Hibiscus sabdariffa* calyxes. *Journal of Food Biochemistry*, 43(7), 1–12. <https://doi.org/10.1111/jfbc.12927>
- Ali, S. A. M., Mohd, C. R. C., & Latip, J. (2019a). Comparison of phenolic constituent in *Hibiscus sabdariffa* cv. UKMR-2 calyx at different harvesting times. *Sains Malaysiana*, 48(7), 1417–1424. <https://doi.org/10.17576/jsm-2019-4807-10>
- _____, Zain, C. R. C. M., & Latip, J. (2019b). Influence of elevated CO₂ on the growth and phenolic constituents. *Jurnal Teknologi*, 3, 109–118.
- _____, Zainalabidin, S., & Latip, J. (2019c). Quantitative analysis of phenolics content in two roselle varieties (*Hibiscus sabdariffa*) by high performance liquid chromatography. *Malaysian Journal of Analytical Sciences*, 23(4), 715–724. <https://doi.org/10.17576/mjas-2019-2304-18>
- Amaya-Cruz, D. M., Perez-Ramirez, I. F., Ortega-Diaz, D., Rodriguez-Garcia, M. E., & Reynoso-Camacho, R. (2018). Roselle (*Hibiscus sabdariffa*) by-product as functional ingredient: effect of thermal processing and particle size reduction on bioactive constituents and functional, morphological, and structural properties. *Journal of Food Measurement and Characterization*, 12(1), 135–144. <https://doi.org/10.1007/s11694-017-9624-0>
- _____, D., Pérez-Ramírez, I. F., Pérez-Jiménez, J., Nava, G. M., & Reynoso-Camacho, R. (2019). Comparison of the bioactive potential of Roselle (*Hibiscus sabdariffa* L.) calyx and its by-product: Phenolic characterization by UPLC-QTOF MSE and their anti-obesity effect in vivo. *Food Research International*, 126(February). <https://doi.org/10.1016/j.foodres.2019.108589>
- Anokwuru, C. P., Esiaba, J., Ajibaye, O., & Adesuyi, A. O. (2011). Polyphenolic content and antioxidant activity of *Hibiscus sabdariffa* calyx. *Research Journal of Medicinal Plant*, 5(5), 557–566. <https://doi.org/10.3923/rjmp.2011.557.566>
- Apáez Barrios, P., Granados, M. D. C. R., Santos, M. E. P., & Montaña, Y. A. R. (2018). Effect of foliar copper application on yield and anthocyanin concentration in *Hibiscus sabdariffa* calyxes. *Revista de La Facultad de Ciencias Agrarias*, 50(2), 65–75.

- Arenas, K. S.L., Cruz Y Victoria, M. T., Vizcarra Mendoza, M. G., Martínez Vera, C., & Anaya Sosa, I. (2016). Effect of agitated bed drying on the retention of phenolic compounds, anthocyanins and antioxidant activity of roselle (*Hibiscus sabdariffa* L.). *International Journal of Food Science and Technology*, 51(6), 1457–1464. <https://doi.org/10.1111/ijfs.13118>
- Ariyabukalakorn, V., Panthong, S., & Itharat, A. (2019). Effects and chemical contents of hydrolysis modification of aqueous roselle extract to reflect the antioxidant and anti-inflammatory effects. *Science and Technology Asia*, 24(4), 115–125. <https://doi.org/10.14456/scitechasia.2019.32>
- Aryanti, Nita, Nafiunisa, A., Wardhani, D. H., & Kumoro, A. C. (2017). Extraction characteristic and microencapsulation of antocyanin as natural food colouring from roselle calyces by ultrasound-assisted extraction. *Jurnal Bahan Alam Terbarukan*, 6(2), 87–96. <https://doi.org/10.15294/jbat.v6i2.9547>
- _____, Nafiunisa, A., Bella, N., Sanjaya, R., Wardhani, D. H., & Kumoro, A. C. (2018). Kinetics of ultrasound-assisted extraction of anthocyanin from purple roselle calyces under different PH conditions. *Chemistry and Chemical Technology*, 12(4), 523–528. <https://doi.org/10.23939/chcht12.04.523>
- _____, Nafiunisa, A., & Wardhani, D. H. (2019). Conventional and ultrasound-assisted extraction of anthocyanin from red and purple roselle (*Hibiscus sabdariffa* L.) calyces and characterisation of its anthocyanin powder. *International Food Research Journal*, 26(2), 529–535.
- Avalos-Martínez, E., Pino, J. A., Sáyago-Ayerdi, S., Sosa-Moguel, O., & Cuevas-Glory, L. (2019). Assessment of volatile compounds and sensory characteristics of Mexican hibiscus (*Hibiscus sabdariffa* L.) calyces hot beverages. *Journal of Food Science and Technology*, 56(1), 360–366. <https://doi.org/10.1007/s13197-018-3496-0>
- Aziz, Z., Wong, S. Y., & Chong, N. J. (2013). Effects of *Hibiscus sabdariffa* L. on serum lipids: A systematic review and meta-analysis. *Journal of Ethnopharmacology*, 150(2), 442–450. <https://doi.org/10.1016/j.jep.2013.09.042>
- Babenko, L. M., Smirnov, O. E., Romanenko, K. O., Trunova, O. K., & Kosakivska, I. V. (2019). Phenolic compounds in plants: Biogenesis and functions. *Ukrainian Biochemical Journal*, 91(3), 5–18. <https://doi.org/10.15407/ubj91.03.005>
- Bayram, O., Sagdic, O., & Ekici, L. (2015). Natural food colorants and bioactive extracts from some edible flowers. *Journal of Applied Botany and Food Quality*, 88, 170–176. <https://doi.org/10.5073/JABFQ.2015.088.024>

- Bechoff, A., Cissé, M., Fliedel, G., Declémy, A. L., Ayessou, N., Akissoe, N., Touré, C., Bennett, B., Pintado, M., Pallet, D., & Tomlins, K. I. (2014). Relationships between anthocyanins and other compounds and sensory acceptability of *Hibiscus* drinks. *Food Chemistry*, 148, 112–119. <https://doi.org/10.1016/j.foodchem.2013.09.132>
- Belwal, T., Ezzat, S. M., Rastrelli, L., Bhatt, I. D., Daglia, M., Baldi, A., Devkota, H. P., Orhan, I. E., Patra, J. K., Das, G., Anandharamakrishnan, C., Gomez-Gomez, L., Nabavi, S. F., Nabavi, S. M., & Atanasov, A. G. (2018). A critical analysis of extraction techniques used for botanicals: Trends, priorities, industrial uses and optimization strategies. *TrAC - Trends in Analytical Chemistry*, 100, 82–102. <https://doi.org/10.1016/j.trac.2017.12.018>
- Bergmeier, D., Berres, P. H. D., Filippi, D., Bilibio, D., Bettiol, V. R., & Priamo, W. L. (2014). Extraction of total polyphenols from hibiscus (*Hibiscus sabdariffa* L.) and waxweed / 'sete-sangrias' (*Cuphea carthagenensis*) and evaluation of their antioxidant potential. *Acta Scientiarum - Technology*, 36(3), 545–551. <https://doi.org/10.4025/actascitechnol.v36i3.19093>
- Bi, W., He, C., Ma, Y., Shen, J., Zhang, L. H., Peng, Y., & Xiao, P. (2016). Investigation of free amino acid, total phenolics, antioxidant activity and purine alkaloids to assess the health properties of non-Camellia tea. *Acta Pharmaceutica Sinica B*, 6(2), 170–181. <https://doi.org/10.1016/j.apsb.2015.11.003>
- Borrás-Linares, I., Fernández-Arroyo, S., Arráez-Roman, D., Palmeros-Suárez, P. A., Del Val-Díaz, R., Andrade-González, I., Fernández-Gutiérrez, A., Gómez-Leyva, J. F., & Segura-Carretero, A. (2015). Characterization of phenolic compounds, anthocyanidin, antioxidant and antimicrobial activity of 25 varieties of Mexican Roselle (*Hibiscus sabdariffa*). *Industrial Crops and Products*, 69, 385–394. <https://doi.org/10.1016/j.indcrop.2015.02.053>
- Boushehri, S. N., Karimbeiki, R., Ghasempour, S., Ghalishourani, S. S., Pourmasoumi, M., Hadi, A., Mbabazi, M., Pour, Z. K., Assaroudi, M., Mahmoodi, M., Khosravi, A., Mansour-Ghanaei, F., & Joukar, F. (2020). The efficacy of sour tea (*Hibiscus sabdariffa* L.) on selected cardiovascular disease risk factors: A systematic review and meta-analysis of randomized clinical trials. *Phytotherapy Research*, 34(2), 329–339. <https://doi.org/10.1002/ptr.6541>
- Brewer, M. S. (2011). Natural Antioxidants: Sources, Compounds, Mechanisms of Action, and Potential Applications. *Comprehensive Reviews in Food Science and Food Safety*, 10(4), 221–247. <https://doi.org/10.1111/j.1541-4337.2011.00156.x>

- Builders, P., Kabele-Toge, B., Builders, M., Chindo, B., Anwunobi, P., & Isimi, Y. (2013). Wound healing potential of formulated extract from *Hibiscus sabdariffa* calyx. *Indian Journal of Pharmaceutical Sciences*, 75(1), 45–52. <https://doi.org/10.4103/0250-474X.113549>
- Bule, M., Albelbeisi, A. H., Nikfar, S., Amini, M., & Abdollahi, M. (2020). The antidiabetic and antilipidemic effects of *Hibiscus sabdariffa*: A systematic review and meta-analysis of randomized clinical trials. *Food Research International*, 130(November 2019), 108980. <https://doi.org/10.1016/j.foodres.2020.108980>
- Camelo-Méndez, G. A., Ragazzo-Sánchez, J. A., Jiménez-Aparicio, A. R., Vanegas-Espinoza, P. E., Paredes-López, O., & Del Villar-Martínez, A. A. (2013). Comparative Study of Anthocyanin and Volatile Compounds Content of Four Varieties of Mexican Roselle (*Hibiscus sabdariffa* L.) by Multivariable Analysis. *Plant Foods for Human Nutrition*, 68(3), 229–234. <https://doi.org/10.1007/s11130-013-0360-2>
- _____, Gustavo A., Jara-Palacios, M. J., Escudero-Gilete, M. L., Gordillo, B., Hernanz, D., Paredes-López, O., Vanegas-Espinoza, P. E., Del Villar-Martínez, A. A., & Heredia, F. J. (2016). Comparative Study of Phenolic Profile, Antioxidant Capacity, and Color-composition Relation of Roselle Cultivars with Contrasting Pigmentation. *Plant Foods for Human Nutrition*, 71(1), 109–114. <https://doi.org/10.1007/s11130-015-0522-5>
- _____, G. A., Vanegas-Espinoza, P. E., Escudero-Gilete, M. L., Heredia, F. J., Paredes-López, O., & Del Villar-Martínez, A. A. (2018). Colorimetric Analysis of Hibiscus Beverages and their Potential Antioxidant Properties. *Plant Foods for Human Nutrition*, 73(3), 247–252. <https://doi.org/10.1007/s11130-018-0672-3>
- Capuzzo, A., Maffei, M. E., & Occhipinti, A. (2013). Supercritical fluid extraction of plant flavors and fragrances. *Molecules*, 18(6), 7194–7238. <https://doi.org/10.3390/molecules18067194>
- Cassol, L., Rodrigues, E., & Zapata Noreña, C. P. (2019). Extracting phenolic compounds from *Hibiscus sabdariffa* L. calyx using microwave assisted extraction. *Industrial Crops and Products*, 133(March), 168–177. <https://doi.org/10.1016/j.indcrop.2019.03.023>
- Chahardoli, A., Jalilian, F., Memariani, Z., Farzaei, M. H., & Shokoohinia, Y. (2020). Analysis of organic acids. In *Recent Advances in Natural Products Analysis*. <https://doi.org/10.1016/b978-0-12-816455-6.00026-3>
- Chaiyasut, C., Sivamaruthi, B. S., Pengkumsri, N., Sirilun, S., Peerajan, S., Chaiyasut, K., & Kesika, P. (2016). Anthocyanin profile and its antioxidant activity of widely used fruits, vegetables, and flowers in Thailand. *Asian Journal of Pharmaceutical and Clinical Research*, 9(6), 218–224. <https://doi.org/10.22159/ajpcr.2016.v9i6.14245>

- Chin, K. L., Zhen, J., Qi, Y., Chin, S. L., Breithaupt, M., Wu, Q. L., Simon, J., Henson, J., & Ferchaud, V. (2016). A comparative evaluation: Phytochemical composition and antioxidant capacity of three roselle (*Hibiscus sabdariffa* L.) accessions. *Acta Horticulturae*, 1125(October), 99–107. <https://doi.org/10.17660/ActaHortic.2016.1125.12>
- Chunthanom, P., Chaikham, P., & Intaket, R. (2013). Biochemical and antibacterial properties of Thai medicine herbal infusions. *International Food Research Journal*, 20(4), 1901–1907.
- Cid-Ortega, S., & Guerrero-Beltrán, J. A. (2015). Roselle calyces (*Hibiscus sabdariffa*), an alternative to the food and beverages industries: a review. *Journal of Food Science and Technology*, 52(11), 6859–6869. <https://doi.org/10.1007/s13197-015-1800-9>
- Cissé, M., Vaillant, F., Soro, D., Reynes, M., & Dornier, M. (2011). Crossflow microfiltration for the cold stabilization of roselle (*Hibiscus sabdariffa* L.) extract. *Journal of Food Engineering*, 106(1), 20–27. <https://doi.org/10.1016/j.jfoodeng.2011.04.001>
- _____, Bohuon, P., Sambe, F., Kane, C., Sakho, M., & Dornier, M. (2012). Aqueous extraction of anthocyanins from *Hibiscus sabdariffa*: Experimental kinetics and modeling. *Journal of Food Engineering*, 109(1), 16–21. <https://doi.org/10.1016/j.jfoodeng.2011.10.012>
- Cong Cong, X., Bing, W., Yi -iong, P., Jian Sheng, T., & Tong, Z. (2017). Advances in extraction and analysis of phenolic compounds from plant materials. *Chinese Journal of Natural Medicines*, 15(10), 721–731. [https://doi.org/10.1016/S1875-5364\(17\)30103-6](https://doi.org/10.1016/S1875-5364(17)30103-6)
- Da-Costa-Rocha, I., Bonnlaender, B., Sievers, H., Pischel, I., & Heinrich, M. (2014). *Hibiscus sabdariffa* L. - A phytochemical and pharmacological review. *Food Chemistry*, 165, 424–443. <https://doi.org/10.1016/j.foodchem.2014.05.002>
- Daniel, D. L., Huerta, B. E. B., Sosa, I. A., & Mendoza, M. G. V. (2012). Effect of fixed bed drying on the retention of phenolic compounds, anthocyanins and antioxidant activity of roselle (*Hibiscus sabdariffa* L.). *Industrial Crops and Products*, 40(1), 268–276. <https://doi.org/10.1016/j.indcrop.2012.03.015>
- _____, Levya, Barragán Huerta, B. E., Vizcarra Mendoza, M. G., & Anaya Sosa, I. (2013). Effect of drying conditions on the retention of phenolic compounds, anthocyanins and antioxidant activity of roselle (*Hibiscus sabdariffa* L.) added to yogurt. *International Journal of Food Science and Technology*, 48(11), 2283–2291. <https://doi.org/10.1111/ijfs.12215>

- Deli, M., Ndjantou, E. B., Ngatchic Metsagang, J. T., Petit, J., Njintang Yanou, N., & Scher, J. (2019). Successive grinding and sieving as a new tool to fractionate polyphenols and antioxidants of plants powders: Application to *Boscia senegalensis* seeds, *Dichrostachys glomerata* fruits, and *Hibiscus sabdariffa* calyx powders. *Food Science and Nutrition*, 7(5), 1795–1806. <https://doi.org/10.1002/fsn3.1022>
- Duy, N. Q., Thoai, H., & Lam, T. (2019a). Effects of Different Extraction Solvent Systems on Total Phenolic, Total Flavonoid, Total Anthocyanin Contents and Antioxidant Activities of Roselle (*Hibiscus sabdariffa* L.) Extracts. *Asian Journal Of Chemistry*, 31(11 (2019)), 2517–2521.
- _____, Binh, M. L. T., Thuan, M., Van, N. T. T., Lam, T. D., Tran, T. H., & Nhan, P. N. T. (2019b). Effects of extraction conditions on total phenolic content and total flavonoid content of roselle (*Hibiscus sabdariffa* L.) extracts. *Key Engineering Materials*, 814 KEM, 469–474. <https://doi.org/10.4028/www.scientific.net/KEM.814.469>
- _____, Pham, T. N., Binh, M. L. T., Thuan, M., Van, N. T. T., Lam, T. D., & Nhan, P. N. T. (2020). Effects of extraction conditions on antioxidant activities of roselle (*Hibiscus sabdariffa* L.) extracts. *Materials Science Forum*, 977 MSF, 201–206. <https://doi.org/10.4028/www.scientific.net/MSF.977.201>
- Farag, M. A., Rasheed, D. M., & Kamal, I. M. (2015). Volatiles and primary metabolites profiling in two *Hibiscus sabdariffa* (roselle) cultivars via headspace SPME-GC-MS and chemometrics. *Food Research International*, 78, 327–335. <https://doi.org/10.1016/j.foodres.2015.09.024>
- Fernández-Arroyo, S., Rodríguez-Medina, I. C., Beltrán-Debón, R., Pasini, F., Joven, J., Micol, V., Segura-Carretero, A., & Fernández-Gutiérrez, 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(5), 1490–1495. <https://doi.org/10.1016/j.foodres.2011.03.040>
- Fitrotunnisa, Q., Arsianti, A., Tejaputri, N. A., & Qorina, F. (2019). Antioxidative activity and phytochemistry profile of *Hibiscus sabdariffa* herb extracts. *International Journal of Applied Pharmaceutics*, 11(Special Issue 6), 29–32. <https://doi.org/10.22159/ijap.2019.v11s6.33532>
- Formagio, A., Ramos, D., Vieira, M., Ramalho, S., Silva, M., Zárata, N., Foglio, M., & Carvalho, J. (2015). Phenolic compounds of *Hibiscus sabdariffa* and influence of organic residues on its antioxidant and antitumoral properties. *Brazilian Journal of Biology*, 75(1), 69–76. <https://doi.org/10.1590/1519-6984.07413>

- Gan, R. Y., Chan, C. L., Yang, Q. Q., Li, H. Bin, Zhang, D., Ge, Y. Y., Gunaratne, A., Ge, J., & Corke, H. (2018). Bioactive compounds and beneficial functions of sprouted grains. In *Sprouted Grains: Nutritional Value, Production, and Applications* (Issue October). <https://doi.org/10.1016/B978-0-12-811525-1.00009-9>
- Grajeda-Iglesias, C., Figueroa-Espinoza, M. C., Barouh, N., Baréa, B., Fernandes, A., De Freitas, V., & Salas, E. (2016). Isolation and Characterization of Anthocyanins from *Hibiscus sabdariffa* Flowers. *Journal of Natural Products*, 79(7), 1709–1718. <https://doi.org/10.1021/acs.jnatprod.5b00958>
- _____, Salas, E., Barouh, N., Baréa, B., & Figueroa-Espinoza, M. C. (2017). Lipophilization and MS characterization of the main anthocyanins purified from hibiscus flowers. *Food Chemistry*, 230, 189–194. <https://doi.org/10.1016/j.foodchem.2017.02.140>
- Guardiola, S., & Mach, N. (2014). Therapeutic potential of *Hibiscus sabdariffa*: A review of the scientific evidence. *Endocrinología y Nutrición (English Edition)*, 61(5), 274–295. <https://doi.org/10.1016/j.endoen.2014.04.003>
- Gulsheen, Kumar, A., & Sharma, A. (2019). Antianxiety and Antidepressant Activity Guided Isolation and Characterization of Gossypetin from *Hibiscus sabdariffa* Linn. Calyces. *Journal of Biologically Active Products from Nature*, 9(3), 205–214. <https://doi.org/10.1080/22311866.2019.1615552>
- Gurtler, J. B., & Mai, T. L. (2014). Preservatives: Traditional Preservatives - Organic Acids. In *Encyclopedia of Food Microbiology: Second Edition* (Second Edi, Vol. 3). Elsevier. <https://doi.org/10.1016/B978-0-12-384730-0.00260-3>
- Hassan, S. T. S., & Švajdlenka, E. (2017). Biological evaluation and molecular docking of protocatechuic acid from *Hibiscus sabdariffa* L. as a potent urease inhibitor by an ESI-MS based method. *Molecules*, 22(10). <https://doi.org/10.3390/molecules22101696>
- Higginbotham, K. L., Burris, K. P., Zivanovic, S., Davidson, P. M., & Stewart, C. N. (2014). Aqueous extracts of *Hibiscus sabdariffa* calyces as an antimicrobial rinse on hot dogs against *Listeria monocytogenes* and methicillin-resistant *Staphylococcus aureus*. *Food Control*, 40(1), 274–277. <https://doi.org/10.1016/j.foodcont.2013.12.011>
- Hinojosa-Gómez, J., Martin-Hernández, C. S., Heredia, J. B., León-Félix, J., Osuna-Enciso, T., & Muy-Rangel, M. D. (2018). Roselle (*Hibiscus sabdariffa* L.) cultivars calyx produced hydroponically: Physicochemical and nutritional quality. *Chilean Journal of Agricultural Research*, 78(4), 478–485. <https://doi.org/10.4067/S0718-58392018000400478>

- Hopkins, A. L., Lamm, M. G., Funk, J., & Ritenbaugh, C. (2013). *Hibiscus sabdariffa* L. in the treatment of hypertension and hyperlipidemia: a comprehensive review of animal and human studies. *Fitoterapia*, 85(1), 84–94. <https://doi.org/10.1016/j.fitote.2013.01.003>.
- Ibrahim, R., & Mazuki, N. A. F. (2013). The quality of roselle (*Hibiscus sabdariffa* L.) juices made from roselle calyces stored at different cold temperatures. *Malaysian Applied Biology*, 42(1), 67–71.
- Idham, Z., Nasir, H. M., Yunus, M. A. C., Yian, L. N., Peng, W. L., Hassan, H., & Setapar, S. H. M. (2017). Optimisation of supercritical CO₂ extraction of red colour from roselle (*Hibiscus sabdariffa* Linn.) calyces. *Chemical Engineering Transactions*, 56, 871–876. <https://doi.org/10.3303/CET1756146>
- Ifie, I., Ifie, B. E., Ibitoye, D. O., Marshall, L. J., & Williamson, G. (2018a). Seasonal variation in *Hibiscus sabdariffa* (Roselle) calyx phytochemical profile, soluble solids and α -glucosidase inhibition. *Food Chemistry*, 261(April), 164–168. <https://doi.org/10.1016/j.foodchem.2018.04.052>
- _____, Abrankó, L., Villa-Rodriguez, J. A., Papp, N., Ho, P., Williamson, G., & Marshall, L. J. (2018b). The effect of ageing temperature on the physicochemical properties, phytochemical profile and α -glucosidase inhibition of *Hibiscus sabdariffa* (roselle) wine. *Food Chemistry*, 267(May 2017), 263–270. <https://doi.org/10.1016/j.foodchem.2017.05.044>
- Ignat, I., Volf, I., & Popa, V. I. (2013). Natural products: Phytochemistry, botany and metabolism of alkaloids, phenolics and terpenes. In *Natural Products: Phytochemistry, Botany and Metabolism of Alkaloids, Phenolics and Terpenes*. <https://doi.org/10.1007/978-3-642-22144-6>
- Ilyasov, I. R., Beloborodov, V. L., Selivanova, I. A., & Terekhov, R. P. (2020). ABTS/PP decolorization assay of antioxidant capacity reaction pathways. *International Journal of Molecular Sciences*, 21(3). <https://doi.org/10.3390/ijms21031131>
- Inggrid, H. M., Jaka, & Santoso, H. (2016). Natural red dyes extraction on roselle petals. *IOP Conference Series: Materials Science and Engineering*, 162(1). <https://doi.org/10.1088/1757-899X/162/1/012029>
- Izquierdo-Vega, J. A., Arteaga-Badillo, D. A., Sánchez-Gutiérrez, M., Morales-González, J. A., Vargas-Mendoza, N., Gómez-Aldapa, C. A., Castro-Rosas, J., Delgado-Olivares, L., Madrigal-Bujaidar, E., & Madrigal-Santillán, E. (2020). Organic acids from Roselle (*Hibiscus sabdariffa* L.)-A brief review of its pharmacological effects. *Biomedicines*, 8(5), 1–16. <https://doi.org/10.3390/BIOMEDICINES8050100>

- Jabeur, I., Pereira, E., Barros, L., Calhelha, R. C., Soković, M., Oliveira, M. B. P. P., & Ferreira, I. C. F. R. (2017). *Hibiscus sabdariffa* L. as a source of nutrients, bioactive compounds and colouring agents. *Food Research International*, 100(May), 717–723. <https://doi.org/10.1016/j.foodres.2017.07.073>
- _____, Pereira, E., Caleja, C., Calhelha, R. C., Soković, M., Catarino, L., Barros, L., & Ferreira, I. C. F. R. (2019). Exploring the chemical and bioactive properties of: *Hibiscus sabdariffa* L. calyces from Guinea-Bissau (West Africa). *Food and Function*, 10(4), 2234–2243. <https://doi.org/10.1039/c9fo00287a>
- Jacob, J. P. S., & Shenbagaraman, S. (2011). Evaluation of antioxidant and antimicrobial activities of the selected green leafy vegetables. *International Journal of PharmTech Research*, 3(1), 148–152.
- Juhari, N. H., Bredie, W. L. P., Toldam-Andersen, T. B., & Petersen, M. A. (2018). Characterization of Roselle calyx from different geographical origins. *Food Research International*, 112(January), 378–389. <https://doi.org/10.1016/j.foodres.2018.06.049>
- Jung, E., Kim, Y., & Joo, N. (2013). Physicochemical properties and antimicrobial activity of Roselle (*Hibiscus sabdariffa* L.). *Journal of the Science of Food and Agriculture*, 93(15), 3769–3776. <https://doi.org/10.1002/jsfa.6256>
- Kafkas, N. E., Kosar, M., Öz, A. T., & Mitchell, A. E. (2018). Advanced Analytical Methods for Phenolics in Fruits. *Journal of Food Quality*, 2018. <https://doi.org/10.1155/2018/3836064>
- Kalla, M. L. M., Jong, E. N., Kayem, J. G., Sreekumar, M. M., & Nisha, P. (2015). Effect of re-extraction parameters and drying temperature on the antioxidant properties and dietary fiber of Red sorrel (*Hibiscus sabdariffa* L.) calyces residues. *Industrial Crops and Products*, 74, 680–688. <https://doi.org/10.1016/j.indcrop.2015.05.028>
- Kane, A., Achir, N., Cissé, M., Pallet, D., Sakho, M., & Dornier, M. (2019). Identification of roselle varieties through simple discriminating physicochemical characteristics using multivariate analysis. *Food Science and Technology*, 39(2), 321–327. <https://doi.org/10.1590/1678-457X.29417>
- Kashyap, D., Sarmah, P., & Sarma, A. (2015). Nutritional evaluation of calyces and epi-calyces from two variants of *Hibiscus sabdariffa* L.: A comparison. *Research Journal of Medicinal Plant*, 9(5), 241–247. <https://doi.org/10.3923/rjmp.2015.241.247>
- Khoddami, A., Wilkes, M. A., & Roberts, T. H. (2013). Techniques for analysis of plant phenolic compounds. *Molecules*, 18(2), 2328–2375. <https://doi.org/10.3390/molecules18022328>

- Koutsos, T. M., Menexes, G. C., & Dordas, C. A. (2019). An efficient framework for conducting systematic literature reviews in agricultural sciences. *Science of the Total Environment*, 682, 106–117. <https://doi.org/10.1016/j.scitotenv.2019.04.354>
- Kurtulbaş, E., Pekel, A. G., Bilgin, M., Makris, D. P., & Şahin, S. (2020). Citric acid-based deep eutectic solvent for the anthocyanin recovery from *Hibiscus sabdariffa* through microwave-assisted extraction. *Biomass Conversion and Biorefinery*. <https://doi.org/10.1007/s13399-020-00606-3>
- Lattanzio, V. (2013). Phenolic Compounds: Introduction. In *Natural Products: Phytochemistry, Botany and Metabolism of Alkaloids, Phenolics and Terpenes*. <https://doi.org/10.1007/978-3-642-22144-6>
- Lefebvre, T., Destandau, E., & Lesellier, E. (2021). Selective extraction of bioactive compounds from plants using recent extraction techniques: A review. *Journal of Chromatography A*, 1635, 461770. <https://doi.org/10.1016/j.chroma.2020.461770>
- Lourith, N., & Kanlayavattanakul, M. (2013). Antioxidant activity and stability of natural colour. *Agro Food Industry Hi Tech*, 24(5), 40–43.
- Lukmanto, S., Roesdiyono, N., Ju, Y. H., Indraswati, N., Soetaredjo, F. E., & Ismadji, S. (2013). Supercritical Co₂ Extraction of Phenolic Compounds in Roselle(*Hibiscus sabdariffa* L.). *Chemical Engineering Communications*, 200(9), 1187–1196. <https://doi.org/10.1080/00986445.2012.742433>
- Luna-Guevara, M. L., Luna-Guevara, J. J., Hernández-Carranza, P., Ruiz-Espinosa, H., & Ochoa-Velasco, C. E. (2018). Phenolic Compounds: A Good Choice Against Chronic Degenerative Diseases. *Studies in Natural Products Chemistry*, 59, 79–108. <https://doi.org/10.1016/B978-0-444-64179-3.00003-7>
- Maciel, L. G., do Carmo, M. A. V., Azevedo, L., Daguer, H., Molognoni, L., de Almeida, M. M., Granato, D., & Rosso, N. D. (2018). *Hibiscus sabdariffa* anthocyanins-rich extract: Chemical stability, in vitro antioxidant and antiproliferative activities. *Food and Chemical Toxicology*, 113(November 2017), 187–197. <https://doi.org/10.1016/j.fct.2018.01.053>
- Maldonado-Astudillo, Y. I., Jiménez-Hernández, J., Arámbula-Villa, G., Flores-Casamayor, V., Álvarez-Fitz, P., Ramírez-Ruano, M., & Salazar, R. (2019). Effect of water activity on extractable polyphenols and some physical properties of *Hibiscus sabdariffa* L. calyces. *Journal of Food Measurement and Characterization*, 13(1), 687–696. <https://doi.org/10.1007/s11694-018-9981-3>

- Mercado-Mercado, G., Blancas-Benitez, F. J., Velderrain-Rodríguez, G. R., Montalvo-González, E., González-Aguilar, G. A., Alvarez-Parrilla, E., & Sáyago-Ayerdi, S. G. (2015). Bioaccessibility of polyphenols released and associated to dietary fibre in calyces and decoction residues of Roselle (*Hibiscus sabdariffa* L.). *Journal of Functional Foods*, 18, 171–181. <https://doi.org/10.1016/j.jff.2015.07.001>
- Minatel, I. O., Borges, C. V., Ferreira, M. I., Gomez, H. A. G., Chen, C.-Y. O., & Lima, G. P. P. (2017). Phenolic Compounds: Functional Properties, Impact of Processing and Bioavailability. *Phenolic Compounds - Biological Activity*, 1–24. <https://doi.org/10.5772/66368>
- Miranda-Medina, A., Hayward-Jones, P. M., Carvajal-Zarrabal, O., de Guevara-Vela, L. del A. L., Ramírez-Villagómez, Y. D., Barradas-Dermitz, D. M., Luna-Carrillo, G., & Aguilar-Uscanga, M. G. (2018). Optimization of *Hibiscus sabdariffa* L. (Roselle) anthocyanin aqueous-ethanol extraction parameters using response surface methodology. *Scientific Study and Research: Chemistry and Chemical Engineering, Biotechnology, Food Industry*, 19(1), 53–62.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *BMJ (Online)*, 339(7716), 332–336. <https://doi.org/10.1136/bmj.b2535>
- Mojica, L., Rui, L., & Mejia, E. G. De. (2012). *Hibiscus sabdariffa* L. : *Phytochemical Composition and Nutraceutical Properties*.
- Mollah, M. A. F., Tareq, M. Z., Bashar, K. K., Zahidul Hoque, A. B. M., Karim, M. M., & Al Rafiq, M. Z. (2020). Antioxidant properties of BJRI vegetable mesta-1 (*Hibiscus sabdariffa* L.). *Plant Science Today*, 7(2), 154–156. <https://doi.org/10.14719/PST.2020.7.2.664>
- Nadlene, R., Sapuan, S. M., Jawaaid, M., Ishak, M. R., & Yusriah, L. (2016). A Review on Roselle Fiber and Its Composites. *Journal of Natural Fibers*, 13(1), 10–41. <https://doi.org/10.1080/15440478.2014.984052>
- Ningrum, A., Schreiner, M., Luna, P., Khoerunnisa, F., & Tienkink, E. (2019). Free volatile compounds in red and purple roselle (*Hibiscus sabdariffa*) pomace from Indonesia. *Food Research*, 3(6), 749–754. [https://doi.org/10.26656/fr.2017.3\(6\).133](https://doi.org/10.26656/fr.2017.3(6).133)
- Nuryanti, S., Matsjeh, S., Anwar, C., & Raharjo, T. J. (2012). Isolation anthocyanin from roselle petals (*Hibiscus sabdariffa* L) and the effect of light on the stability. *Indonesian Journal of Chemistry*, 12(2), 167–171. <https://doi.org/10.22146/ijc.21358>
- Oboh, G., Adewuni, T. M., Ademiluyi, A. O., Olasehinde, T. A., & Ademosun, A. O. (2018). Phenolic Constituents and Inhibitory Effects of *Hibiscus sabdariffa* L. (Sorrel) Calyx on Cholinergic, Monoaminergic, and Purinergic Enzyme Activities. *Journal of Dietary Supplements*, 15(6), 910–922.

<https://doi.org/10.1080/19390211.2017.1406426>

- Obouayeba, A. P., Djyh, N. B., Sekou, D., Djaman, A. J., N'guessan, J. D., Kone, M., & Kouakou, T. H. (2013). Phytochemical and Antioxidant Activity of Roselle (*Hibiscus sabdariffa* L.) Petal Extracts. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 4(2), 1694–1720.
- Ochoa-Velasco, C. E., & Ruiz-López, I. I. (2019). Mass transfer modeling of the antioxidant extraction of roselle flower (*Hibiscus sabdariffa*). *Journal of Food Science and Technology*, 56(2), 1008–1015. <https://doi.org/10.1007/s13197-018-03567-8>
- Ojulari, O. V., Lee, S. G., & Nam, J. O. (2019). Beneficial Effects of Natural Bioactive Compounds from *Hibiscus sabdariffa* L. On obesity. *Molecules*, 24(1), 1–14. <https://doi.org/10.3390/molecules24010210>
- Opletal, L., Chocholousova-Havlikova, L., Siatka, T., Cahliková, L., Locarek, M., Ali, B. H., Manoj, P., Ramkumar, A., Al Suleimani, Y. M., Al Za'Abi, M., Karaca, T., & Nemmar, A. (2017). Preparation and validated analysis of anthocyanin concentrate from the calyces of *Hibiscus sabdariffa*. *Natural Product Communications*, 12(1), 44–45. <https://doi.org/10.1177/1934578x1701200112>
- Özdogan, F. P., Orhan, N., & Ergun, F. (2011). Studies on the conformity of *Hibiscus sabdariffa* l. samples from turkish market to european pharmacopeia. *Fabad Journal of Pharmaceutical Sciences*, 36(1), 25–32.
- Paraíso, C. M., dos Santos, S. S., Correa, V. G., Magon, T., Peralta, R. M., Visentainer, J. V., & Madrona, G. S. (2019). Ultrasound assisted extraction of hibiscus (*Hibiscus sabdariffa* L.) bioactive compounds for application as potential functional ingredient. *Journal of Food Science and Technology*, 56(10), 4667–4677. <https://doi.org/10.1007/s13197-019-03919-y>
- _____, dos Santos, S. S., Ogawa, C. Y. L., Sato, F., dos Santos, O. A. A., & Madrona, G. S. (2020). *Hibiscus sabdariffa* L. extract: Characterization (FTIR-ATR), storage stability and food application. *Emirates Journal of Food and Agriculture*, 32(1), 55–61. <https://doi.org/10.9755/EJFA.2020.V32.I1.2059>
- Pengkumsri, N., Kaewdoo, K., Leeprechanon, W., & Sivamaruthi, B. S. (2019). Influence of extraction methods on total phenolic content and antioxidant properties of some of the commonly used plants in Thailand. *Pakistan Journal of Biological Sciences*, 22(3), 117–126. <https://doi.org/10.3923/pjbs.2019.117.126>
- Pérez-Ramírez, I. F., Castaño-Tostado, E., Ramírez-De León, J. A., Rocha-Guzmán, N. E., & Reynoso-Camacho, R. (2015). Effect of stevia and citric acid on the stability of phenolic compounds and in vitro antioxidant and antidiabetic capacity of a roselle (*Hibiscus sabdariffa* L.) beverage. *Food Chemistry*, 172, 885–892. <https://doi.org/10.1016/j.foodchem.2014.09.126>

- Pham, T. N., Phu Nguyen, T. N., Duc, L. T., Nguyen, M. T., Toan, T. Q., Hong Nhan, L. T., N-Vo, D. V., Vo, T. S., & Bui, L. M. (2019). Response surface modeling and optimizing conditions for anthocyanins extraction from *Hibiscussabdariffa* L. (Roselle) grown in Lam Dong, Vietnam. *IOP Conference Series: Materials Science and Engineering*, 544(1). <https://doi.org/10.1088/1757-899X/544/1/012016>
- _____, Nguyen, T. N. P., Lam, T. D., Tran, T. H., Nguyen, D. C., Vo, D. V. N., Le, X. T., Do, S. T., & Bach, L. G. (2019). Effects of various solvent concentration, liquid-solid ratio, temperatures and time values on the extraction yield of anthocyanin from Vietnam *Hibiscus sabdariffa* L. (Roselle). *IOP Conference Series: Materials Science and Engineering*, 542(1). <https://doi.org/10.1088/1757-899X/542/1/012033>
- Pimentel-Moral, S., Borrás-Linares, I., Lozano-Sánchez, J., Arráez-Román, D., Martínez-Férez, A., & Segura-Carretero, A. (2018). Microwave-assisted extraction for *Hibiscus sabdariffa* bioactive compounds. *Journal of Pharmaceutical and Biomedical Analysis*, 156, 313–322. <https://doi.org/10.1016/j.jpba.2018.04.050>
- _____, Borrás-Linares, I., Lozano-Sánchez, J., Arráez-Román, D., Martínez-Férez, A., & Segura-Carretero, A. (2019). Supercritical CO₂ extraction of bioactive compounds from *Hibiscus sabdariffa*. *Journal of Supercritical Fluids*, 147, 213–221. <https://doi.org/10.1016/j.supflu.2018.11.005>
- Pinela, J., Prieto, M. A., Pereira, E., Jabeur, I., Barreiro, M. F., Barros, L., & Ferreira, I. C. F. R. (2019). Optimization of heat- and ultrasound-assisted extraction of anthocyanins from *Hibiscus sabdariffa* calyces for natural food colorants. *Food Chemistry*, 275(September 2018), 309–321. <https://doi.org/10.1016/j.foodchem.2018.09.118>
- Piovesana, A., Rodrigues, E., & Noreña, C. P. Z. (2019). Composition analysis of carotenoids and phenolic compounds and antioxidant activity from hibiscus calyces (*Hibiscus sabdariffa* L.) by HPLC-DAD-MS/MS. *Phytochemical Analysis*, 30(2), 208–217. <https://doi.org/10.1002/pca.2806>
- Pires, T. C. S. P., Barros, L., Santos-Buelga, C., & Ferreira, I. C. F. R. (2019). Edible flowers: Emerging components in the diet. *Trends in Food Science and Technology*, 93(October), 244–258. <https://doi.org/10.1016/j.tifs.2019.09.020>
- Platto, A. Hibiscus: Post-Production Management for Improved Market Access. *INPhO-Post-harvest Compend*. 2004, 56.
- Portillo-Torres, L. A., Bernardino-Nicanor, A., Gómez-Aldapa, C. A., González-Montiel, S., Rangel-Vargas, E., Villagómez-Ibarra, J. R., González-Cruz, L., Cortés-López, H., & Castro-Rosas, J. (2019). Hibiscus acid and chromatographic fractions from *Hibiscus sabdariffa* calyces: Antimicrobial activity against multidrug-resistant pathogenic bacteria. *Antibiotics*, 8(4), 1–18. <https://doi.org/10.3390/antibiotics8040218>

- Pozos, G. I. P., Ruiz-López, M. A., Nátera, J. F. Z., Moya, C. Á., Ramírez, L. B., Silva, M. R., Macías, R. R., García-López, P. M., Cruz, R. G., Pérez, E. S., & Radillo, J. J. V. (2020). Antioxidant capacity and antigenotoxic effect of *Hibiscus sabdariffa* L. extracts obtained with ultrasound-assisted extraction process. *Applied Sciences (Switzerland)*, 10(2). <https://doi.org/10.3390/app10020560>
- Pragalyaashree, M. M., Tiroutchelvame, D., & Sashikumar, S. (2018). Degradation kinetics of anthocyanin extracted from roselle calyces (*Hibiscus sabdariffa*). *Journal of Applied Pharmaceutical Science*, 8(11), 57–63. <https://doi.org/10.7324/JAPS.2018.81108>
- Pulgarín, J. A. M., Bermejo, L. F. G., & Durán, A. C. (2019). A fast and simple FIA-chemiluminescence method for the evaluation of Roselle flowers as scavenger of the free radicals generated by UV irradiated antibiotics. *Journal of Pharmaceutical and Biomedical Analysis*, 164, 630–635. <https://doi.org/10.1016/j.jpba.2018.11.004>
- Purbowati, I. S. M., & Maksum, A. (2019). The antioxidant activity of Roselle (*Hibiscus sabdariffa* Linii) phenolic compounds in different variations microwave-Assisted extraction time and power. *IOP Conference Series: Earth and Environmental Science*, 406(1). <https://doi.org/10.1088/1755-1315/406/1/012005>
- Qi, Y., Chin, K. L., Malekian, F., Berhane, M., & Gager, J. (2005). Biological Characteristics , Nutritional and Medicinal Value of Roselle , *Hibiscus sabdariffa* Biological Characteristics , Nutritional and Medicinal Value of Roselle , *Hibiscus sabdariffa*. *Agricultural Research and Extension Center*, 70813(MARCH 2005), 603–604.
- Rababah, T. M., Ereifej, K. I., Esoh, R. B., Al-U'Datt, M. H., Alrababah, M. A., & Yang, W. (2011). Antioxidant activities, total phenolics and HPLC analyses of the phenolic compounds of extracts from common Mediterranean plants. *Natural Product Research*, 25(6), 596–605. <https://doi.org/10.1080/14786419.2010.488232>
- Ramírez-Cortés, B., Caro-Velarde, F. de J., Valdivia-Reynoso, M. G., Ramírez-Lozano, M. H., & Machuca-Sánchez, L. (2011). Changes in size and chemical characteristics of roselle (*Hibiscus sabdariffa* L.) calyces during maturation. *Revista Chapingo Serie Horticultura*, XVII, 19–31.
- Ramírez-Rodrigues, M. M., Balaban, M. O., Marshall, M. R., & Rouseff, R. L. (2011a). Hot and Cold Water Infusion Aroma Profiles of *Hibiscus sabdariffa*: Fresh Compared with Dried. *Journal of Food Science*, 76(2), 212–217. <https://doi.org/10.1111/j.1750-3841.2010.01989.x>
- _____, Plaza, M. L., Azeredo, A., Balaban, M. O., & Marshall, M. R. (2011b). Physicochemical and phytochemical properties of cold and hot water extraction from *Hibiscus sabdariffa*. *Journal of Food Science*, 76(3), C428–C435. <https://doi.org/10.1111/j.1750-3841.2011.02091.x>

- Rasheed, D. M., Porzel, A., Frolov, A., El Seedi, H. R., Wessjohann, L. A., & Farag, M. A. (2018). Comparative analysis of *Hibiscus sabdariffa* (roselle) hot and cold extracts in respect to their potential for α -glucosidase inhibition. *Food Chemistry*, 250(July 2017), 236–244. <https://doi.org/10.1016/j.foodchem.2018.01.020>
- Reyes-Luengas, A., Salinas-Moreno, Y., Ovando-Cruz, M. E., Arteaga-Garibay, R. I., & Martínez-Peña, M. D. (2015). Análisis de ácidos fenólicos y actividad antioxidante de extractos acuosos de variedades de Jamaica (*Hibiscus sabdariffa* L.) con cálices de colores diversos analysis of phenolic acids and antioxidant activity of aqueous. *Agrociencia*, 49(3), 277–290.
- Rezende, F. A. G. G., Sande, D., Coelho, A. C., Oliveira, G. P., Boaventura, M. A. D., & Takahashi, J. A. (2019). Edible flowers as innovative ingredients for future food development: Anti-Alzheimer, antimicrobial and antioxidant potential. *Chemical Engineering Transactions*, 75(April 2018), 337–342. <https://doi.org/10.3303/CET1975057>
- Riaz, G., & Chopra, R. (2018). A review on phytochemistry and therapeutic uses of *Hibiscus sabdariffa* L. *Biomedicine and Pharmacotherapy*, 102(May 2017), 575–586. <https://doi.org/10.1016/j.biopha.2018.03.023>
- Salami, S. O., & Afolayan, A. J. (2021). Evaluation of nutritional and elemental compositions of green and red cultivars of roselle: *Hibiscus sabdariffa* L. *Scientific Reports*, 11(1), 1–14. <https://doi.org/10.1038/s41598-020-80433-8>
- Salazar-González, C., Vergara-Balderas, F. T., Ortega-Regules, A. E., & -Beltrán, J. Á. (2012). Antioxidant properties and color of *Hibiscus sabdariffa* extracts. *Ciencia e Investigación Agraria*, 39(1), 79–90. <https://doi.org/10.4067/s0718-16202012000100006>
- Salem, M. A., Michel, H. E., Ezzat, M. I., Okba, M. M., El-desoky, A. M., Mohamed, S. O., & Ezzat, S. M. (2020). Optimization of an Extraction Solvent for Angiotensin-Converting Enzyme Inhibitors from *Hibiscus sabdariffa* L. Based on Its UPLC-MS/MS Metabolic Profiling. *Molecules*, 25(2307), 1–15.
- Saltveit, M. E. (2017). Synthesis and metabolism of phenolic compounds. *Fruit and Vegetable Phytochemicals: Chemistry and Human Health: Second Edition*, 1, 115–123. <https://doi.org/10.1002/9781119158042.ch5>
- Samadi, S., & Fard, F. R. (2020). Phytochemical properties, antioxidant activity and mineral content (Fe, Zn and Cu) in Iranian produced black tea, green tea and roselle calyces. *Biocatalysis and Agricultural Biotechnology*, 23(November 2019), 101472. <https://doi.org/10.1016/j.bcab.2019.101472>
- Sánchez-Feria, C., González-Hernández, V. A., Salinas-Moreno, Y., & Cruz-Huerta, N. (2017). *Genotype and Environmental Effects on Physical and Chemical Qualities of Mexican Varieties of Hibiscus sabdariffa* L. Flowers. 525–541.

- Sarkar, B., Vyas, P., Haque, I., & Mukhopadhyay, K. (2018). A rapid UPLC method for simultaneous separation and detection of anthocyanidins from *Ocimum*, *Hibiscus* and *Syzygium* species and estimation of their antioxidant activity. *Journal of Liquid Chromatography and Related Technologies*, 41(10), 658–667. <https://doi.org/10.1080/10826076.2018.1506932>
- Sáyago-Ayerdi, S. G., Velázquez-López, C., Montalvo-González, E., & Goñi, I. (2014). By-product from decoction process of *Hibiscus sabdariffa* L. calyces as a source of polyphenols and dietary fiber. *Journal of the Science of Food and Agriculture*, 94(5), 898–904. <https://doi.org/10.1002/jsfa.6333>
- Serban, C., Sahebkar, A., Ursoniu, S., Andrica, F., & Banach, M. (2015). Effect of sour tea (*Hibiscus sabdariffa* L.) on arterial hypertension: A systematic review and meta-analysis of randomized controlled trials. *Journal of Hypertension*, 33(6), 1119–1127. <https://doi.org/10.1097/HJH.0000000000000585>
- Setyaningsih, W., Saputro, I. E., Palma, M., & Barroso, C. G. (2017). Optimization of the ultrasound-assisted extraction of tryptophan and its derivatives from rice (*Oryza sativa*) grains through a response surface methodology. *Journal of Cereal Science*, 75, 192–197. <https://doi.org/10.1016/j.jcs.2017.04.006>
- Sindi, H. A., Marshall, L. J., & Morgan, M. R. A. (2014). Comparative chemical and biochemical analysis of extracts of *Hibiscus sabdariffa*. *Food Chemistry*, 164, 23–29. <https://doi.org/10.1016/j.foodchem.2014.04.097>
- Sinela, A. M., Mertz, C., Achir, N., Rawat, N., Vidot, K., Fulcrand, H., & Dornier, M. (2017a). Exploration of reaction mechanisms of anthocyanin degradation in a roselle extract through kinetic studies on formulated model media. *Food Chemistry*, 235, 67–75. <https://doi.org/10.1016/j.foodchem.2017.05.027>
- _____, Rawat, N., Mertz, C., Achir, N., Fulcrand, H., & Dornier, M. (2017b). Anthocyanins degradation during storage of *Hibiscus sabdariffa* extract and evolution of its degradation products. *Food Chemistry*, 214, 234–241. <https://doi.org/10.1016/j.foodchem.2016.07.071>
- Singh, S., Singh, D. R., Salim, K. M., Srivastava, A., Singh, L. B., & Srivastava, R. C. (2011). Estimation of proximate composition, micronutrients and phytochemical compounds in traditional vegetables from Andaman and Nicobar Islands. *International Journal of Food Sciences and Nutrition*, 62(7), 765–773. <https://doi.org/10.3109/09637486.2011.585961>
- Sipahli, S., Mohanlall, V., & Mellem, J. J. (2017). Stability and degradation kinetics of crude anthocyanin extracts from *H. sabdariffa*. *Food Science and Technology*, 37(2), 209–215. <https://doi.org/10.1590/1678-457X.14216>

- Soradech, S., Kusolkumbot, P., Reungpatthanaphong, P., & Thubthimthed, S. (2016). Investigation of DPPH radical scavenging, antioxidant and melanogenesis stimulating activities of various pigment extracts from Thai herbal plants. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 7(4), 392–399.
- Sukkhaeng, S., Promdang, S., & Doung-ngern, U. (2018). Fruit characters and physico-chemical properties of roselle (*Hibiscus sabdariffa* L.) in Thailand—A screening of 13 new genotypes. *Journal of Applied Research on Medicinal and Aromatic Plants*, 11(October), 47–53. <https://doi.org/10.1016/j.jarmap.2018.10.001>
- Tahir, H. E., Xiaobo, Z., Jiyong, S., Mariod, A. A., & Wiliam, T. (2016). Rapid Determination of Antioxidant Compounds and Antioxidant Activity of Sudanese Karkade (*Hibiscus sabdariffa* L.) Using Near Infrared Spectroscopy. *Food Analytical Methods*, 9(5), 1228–1236. <https://doi.org/10.1007/s12161-015-0299-z>
- _____, Xiaobo, Z., Mariod, A. A., Mahunu, G. K., Abdualrahman, M. A. Y., & Tchabo, W. (2017). Assessment of antioxidant properties, instrumental and sensory aroma profile of red and white Karkade/Roselle (*Hibiscus sabdariffa* L.). *Journal of Food Measurement and Characterization*, 11(4), 1559–1568. <https://doi.org/10.1007/s11694-017-9535-0>
- _____, Arslan, M., Mahunu, G. K., Mariod, A. A., Wen, Z., Xiaobo, Z., Xiaowei, H., Jiyong, S., & El-Seedi, H. (2020). Authentication of the geographical origin of Roselle (*Hibiscus sabdariffa* L) using various spectroscopies: NIR, low-field NMR and fluorescence. *Food Control*, 114(March), 107231. <https://doi.org/10.1016/j.foodcont.2020.107231>
- Takahashi, J. A., Rezende, F. A. G. G., Moura, M. A. F., Domingute, L. C. B., & Sande, D. (2020). Edible flowers: Bioactive profile and its potential to be used in food development. *Food Research International*, 129(November 2019). <https://doi.org/10.1016/j.foodres.2019.108868>
- Tavakolifar, F., Givianrad, M. H., & Saber-Tehrani, M. (2016). Extraction of anthocyanins from *Hibiscus sabdariffa* and assessment of its antioxidant properties in extra virgin olive oil. *Fresenius Environmental Bulletin*, 25(9), 3709–3713.
- Tham, T. C., Ng, M. X., Gan, S. H., Chua, L. S., Aziz, R., Abdullah, L. C., Ong, S. P., Chin, N. L., & Law, C. L. (2018). Impacts of different drying strategies on drying characteristics, the retention of bio-active ingredient and colour changes of dried Roselle. *Chinese Journal of Chemical Engineering*, 26(2), 303–316. <https://doi.org/10.1016/j.cjche.2017.05.011>
- Trinh, L. T. P., Choi, Y. S., & Bae, H. J. (2018). Production of phenolic compounds and biosugars from flower resources via several extraction processes. *Industrial Crops and Products*, 125(June), 261–268. <https://doi.org/10.1016/j.indcrop.2018.09.008>

- Vargas-León, E. A., Díaz-Batalla, L., González-Cruz, L., Bernardino-Nicanor, A., Castro-Rosas, J., Reynoso-Camacho, R., & Gómez-Aldapa, C. A. (2018). Effects of acid hydrolysis on the free radical scavenging capacity and inhibitory activity of the angiotensin converting enzyme of phenolic compounds of two varieties of jamaica (*Hibiscus sabdariffa*). *Industrial Crops and Products*, 116(February), 201–208. <https://doi.org/10.1016/j.indcrop.2018.02.044>
- Villani, T., Juliani, H. R., Simon, J. E., & Wu, Q. (2013). *Hibiscus sabdariffa : Phytochemistry , Quality Control , and Health Properties. II*.
- Vuolo, M. M., Lima, V. S., & Maróstica Junior, M. R. (2018). Phenolic Compounds: Structure, Classification, and Antioxidant Power. In *Bioactive Compounds: Health Benefits and Potential Applications*. Elsevier Inc. <https://doi.org/10.1016/B978-0-12-814774-0.00002-5>
- Widowati, W., Rani, A. P., Amir Hamzah, R., Arumwardana, S., Afifah, E., Kusuma, H. S. W., Rihibiha, D. D., Nufus, H., & Amalia, A. (2017). Antioxidant and antiaging assays of *Hibiscus sabdariffa* extract and its compounds. *Natural Product Sciences*, 23(3), 192–200. <https://doi.org/10.20307/nps.2017.23.3.192>
- Wilson, F. D., & Menzel, M. Y. (1964). Kenaf (*Hibiscus cannabinus*), Roselle (*Hibiscus sabdariffa*). *Economic Botany*, 18(1), 80–91. <https://doi.org/10.1007/BF02904005>
- Wongsa, P., Chaiwarit, J., & Zamaludien, A. (2012). In vitro screening of phenolic compounds, potential inhibition against α -amylase and α -glucosidase of culinary herbs in Thailand. *Food Chemistry*, 131(3), 964–971. <https://doi.org/10.1016/j.foodchem.2011.09.088>
- Wu, H. Y., Yang, K. M., & Chiang, P. Y. (2018). Roselle anthocyanins: Antioxidant properties and stability to heat and pH. *Molecules*, 23(6). <https://doi.org/10.3390/molecules23061357>
- Xu, Y., Hu, D., Bao, T., Xie, J., & Chen, W. (2017). A simple and rapid method for the preparation of pure delphinidin-3-O-sambubioside from Roselle and its antioxidant and hypoglycemic activity. *Journal of Functional Foods*, 39, 9–17. <https://doi.org/10.1016/j.jff.2017.10.002>
- Zannou, O., Kelebek, H., & Selli, S. (2020). Elucidation of key odorants in Beninese Roselle (*Hibiscus sabdariffa* L.) infusions prepared by hot and cold brewing. *Food Research International*, 133(November 2019), 109133. <https://doi.org/10.1016/j.foodres.2020.109133>
- Zhang, B., Yue, R., Wang, Y., Wang, L., Chin, J., Huang, X., & Jiang, Y. (2019). Effect of *Hibiscus sabdariffa* (Roselle) supplementation in regulating blood lipids among patients with metabolic syndrome and related disorders: A systematic review and meta-analysis. *Phytotherapy Research*, November, 1–13. <https://doi.org/10.1002/ptr.6592>

- Zhang, Y., Sang, J., Chen, F. fang, Sang, J., & Li, C. qin. (2018). β -Cyclodextrin-assisted extraction and green chromatographic analysis of *Hibiscus sabdariffa* L. anthocyanins and the effects of gallic/ferulic/caffeic acids on their stability in beverages. *Journal of Food Measurement and Characterization*, 12(4), 2475–2483. <https://doi.org/10.1007/s11694-018-9864-7>
- Zihad, S. M. N. K., Gupt, Y., Uddin, S. J., Islam, M. T., Alam, M. R., Aziz, S., Hossain, M., Shilpi, J. A., Nahar, L., & Sarker, S. D. (2019). Nutritional value, micronutrient and antioxidant capacity of some green leafy vegetables commonly used by southern coastal people of Bangladesh. *Heliyon*, 5(11), e02768. <https://doi.org/10.1016/j.heliyon.2019.e02768>