

## DAFTAR PUSTAKA

- A'yuni, N.R.L., Marsono, Y., Marseno, D.W., & Triwitono, P. (2021). Composition, structure, and physicochemical characteristic of pigeon pea (*Cajanus cajan*) starches from Indonesia. *Biodiversitas* 22(8), 3430-3439.
- Abioye, V.F., Adeyemi, I.A., Akinwande, B.A., Kulakow, P., & Maziya-Dixon, B. (2018). Effect of autoclaving on the formation of resistant starch from two Nigeria Cassava (*Manihot esculenta*) varieties. *Food Research* 2(5), 468-473.
- Adhiyamaan, P.S., & Parimalavalli, R. (2020). Effect of dual modification on crystalline formation of resistant starch from cassava. *Journal of Food Measurement and Characterization* 14, 3520-3528.
- Aggarwal, D., Sabikhi, L., Lamba, H., Chaudhary, N., & Kapila, R. (2017). Whole grains and resistant starch rich, reduced-calorie biscuit diet as a hypoglycaemic, hypolipidaemic and insulin stimulator in streptozotocin-induced diabetic rats. *International Journal of Food Science Technology* 52(1), 118-126.
- Agyekum, A.K., & Nyachoti, C.M. (2017). Nutritional and metabolic consequences of feeding high-fiber dities to swine: a review. *Engineering* 3, 716-725.
- Ahmed, B., Sultana, R., & Greene, M.W. (2021). Adipose tissue and insulin resistance in mice. *Biomedicine & Pharmacotherapy* 137, 111315.
- Ahmed, N., Tetlow, I.J., Nawaz, S., Iqbal, A., Mubin, M., Ul-Rehman, M.S.N., et al. (2015). Effect of high temperature on grain filling period, yield, amylose content and activity of starch biosynthesis enzymes in endosperm of basmati rice. *Journal of the Science of Food and Agriculture* 95(11), 2237-2243.
- Akarsha, B., Shetty, K., & Krishnakumar, G. (2022). Isolation, partial characterization and in vitro digestion of starch from *Ariopsis peltata* and *Lagenandra toxicaria* tuber. *Heliyon* 8(10), 11089.
- Akhila, P.P., Sunooj, K.V., Aaliya, B., Navaf, M., Sudhees, C., Yadav, D.N., et al. (2022). Morphological, physicochemical, functional, pasting, thermal properties and digestibility of hausa potato (*Plectranthus rotundifolius*) flour and starch. *Applied Food Research* 2(2), 100193.
- Alcázar-Alay, S.C., & Meireles, M.A.A. (2015). Physicochemical properties, modifications and applications of starches from different botanical sources. *Food Science and Technology* 35(2), 215-236.
- Alfa, M.J., Strang, D., Tappia, P.S., Graham, M., Domselaar, G.V., Forbes, J.D., et al. (2018). A randomized trial to determine the impact of a digestion resistant starch composition on the gut microbiome in older and mid-age adults. *Clinical Nutrition* 37, 797-807.
- Ali, S.M., Siddique, Y., Mehnaz, S., & Sadiq, M.B. (2023). Extraction and characterization of starch from low-grade potatoes and formulation of gluten-free cookies containing modified potato starch. *Heliyon* 9(9), 19581.
- Alimi, B.A., & Workneh, T.S. (2018). Structural and physicochemical properties of heat moisture treated and citric acid modified acha and iburu starches. *Food Hydrocolloids* 81, 449-455.
- Amalia, R., Pramono, A., Afifah, D.N., Noer, E.R., Muniroh, M., & Kumoro, A.C. (2022). Mangrove fruit (*Bruguiera gymnorrhiza*) increases circulating GLP-1

- and PYY, modulates lipid profiles, and reduces systemic inflammation by improving SCFA levels in obese wistar rats. *Heliyon* 8, 10887.
- Ameen, O.M., Olatunji, G.A., Abdulrahman, A.A., Adenusi, B.F., Folorunsho, O.F., Okeola, O.F., et al. (2018). Physicochemical properties of starch obtained from tubers of anchomanes difformis and *Tacca involucreta*. *Centrepoint Journal* 24(2), 67-80.
- Amelia, T. (2020). Pengaruh factor iklim terhadap sintesis amilosa (sebuah kajian literatur). *Biology Education Science & Technology Journal* 3(2), 17-25.
- Andarwulan, N., Kusnandar, F., & Herawati, D. (2011). *Analisis Pangan*. Dian Rakyat, Jakarta.
- Anonim. (2006). *Obesity: The Science Inside*. American Association for the Advancement of Science. New York.
- Anugrah, M.P., Faridah, D.N., Afandi, F.A., Hunaefi, D., & Jayanegara, A. (2022). Annealing processing technique divergently affects starch crystallinity characteristic related to resistant starch content: a literature review and meta-analysis. *International Journal of Food Science and Technology* 57, 2535-2544.
- AOAC. (1995). *Official methods of analysis of AOAC International*. 2 Vols. 16<sup>th</sup> ed. Association of Analytical Communities. Arlington, VA, USA.
- Arp, C.G., Correa, M.J., & Ferrero, C. (2021). Resistant starches: A smart alternative for the development of functional bread and other starch-based foods. *Food Hydrocolloids* 121, 106949.
- Ashogbon, A.O., & Akintayo, E.T. (2014). Recent trend in the physical and chemical modification of starches from different botanical sources: A review. *Starch* 66, 41-57.
- Ashwar, B.A., Gani, A., Wani, I.A., Shah, A., Masoodi, F.A., & Saxena, D.C. (2016a). Production of resistant starch from rice by dual autoclaving-retrogradation treatment: Invitro digestibility, thermal and structural characterization. *Food Hydrocolloids* 56, 108-117.
- Ashwar, B.A., Gani, A., Shah, A., Wani, I.A., & Masoodi, F.A. (2016b). Preparation, health benefits and applications of resistant starch-a review. *Starch* 68(3-4), 287-301.
- Astuti, R.M., Widyaningrum., Asiah, N., Setyowati, A., & Fitriawati, R. (2018). Effect of physical modification on granule morphology, pasting behavior, and functional properties of arrowroot (*Marantha arundinacea* L) starch. *Food Hydrocolloids* 81, 23-30.
- Azman, K.F., Amom, Z., Azlan, A., Esa, N.M., Ali, R.M., Shah, Z.M., et al. (2012). Antiobesity effect of Tamarindus indica L. pulp aqueous extract in high-fat diet-induced obese rats. *Journal of Natural Medicines* 66, 333-342.
- Babu, A.S., Parimalavalli, R., Jagannadham, K., & Rao, J.S. (2015a). Chemical and structural properties of sweet potato starch treated with organic and inorganic acid. *Journal of Food Science and Technology* 52(9), 5745-5753.
- Babu, A.S., Parimalavalli, R., & Rudra, S.G. (2015b). Effect of citric acid concentration and hydrolysis time on physicochemical properties of sweet potato starches. *International Journal of Biological Macromolecules* 80, 557-565.

- Bai, J., Zhu, Y., & Dong, Y. (2016). Response of gut microbiota and inflammatory status to bitter melon (*Momordica charantia* L.) in high fat diet induced obese rats. *Journal of Ethnopharmacology* 194, 717-726.
- Barazzoni, R., Cappelari, G.G., Ragni, M., & Nisoli, E. (2018). Insulin resistance in obesity: an overview of fundamental alterations. *Eating and Weight Disorders – Studies on Anorexia, Bulimia and Obesity* 23, 149-157.
- Bashir, K., & Aggarwal, M. (2019). Physicochemical, structural and functional properties of native and irradiated starch: a review. *Journal of Food Science and Technology* 56, 513-523.
- Bath, F.M., & Riar, C.S. (2016). Effect of amylose, particle size & morphology on the functionality of starches of traditional rice cultivars. *International Journal of Biological Macromolecules* 92, 637-644.
- Beckles, D.M., & Thitisaksakul, M. (2014) How environmental stress affects starch composition and functionality in cereal endosperm. *Starch* 66(1-2), 58-71.
- Bello-Perez, L.A., Flores-Silva, P.C., Agama-Acevedo, E., & Tovar, J. (2020). Starch digestibility: past, present, and future. *Journal of the Sciences of Food and Agriculture* 100(14), 5009-5016.
- Bertoft, E. (2017). Understanding starch structure: recent progress. *Agronomy* 7(3), 56.
- Bertolini, A.C. (2010). *Starches: Characterization, Properties, and Applications*. CRC Press. Boca Raton London New York.
- Bhat, F.M., & Riar, C.S. (2016). Effect of amylose, particle size & morphology on the functionality of starches of traditional rice cultivars. *International Journal of Biological Macromolecules* 92, 637-644.
- Binh, H.T., & Dao, V.T.T. (2020). Study on the effects of harvesting time and storage conditions of *Tacca leontopetaloides* (L.) Kuntze Tuber in an Giang Province, Vietnam. *IOP Conference Series: Earth and Environmental Science* 515: 012033.
- Birkett, A.M., & Brown, I.L. (2007). *Novel food ingredients for weight control*. Dalam: Henry, C.J.K., editor. *Resistant Starch*. Hal: 174-197. Cambridge, U.K.: Woodhead Publishing Limited
- Birt, D.F., Boylston, T., Hendrich, S., Jane, J-L., Hollis, J., Li, L., et al. (2013). Resistant starch: promise for improving human health. *Advances in Nutrition* 4(6), 587-601.
- Biselli, C., Cavalluzzo, D., Perrini, R., Gianinetti, A., Bagnaresi, P., Urso, S., et al. (2014). Improvement of marker-based predictability of Apparent Amylose Content in *japonica* rice through *GBSSI* allele mining. *Rice* 7(1), 1-18.
- Ble-Castillo, J.L., Aparicio-Trapala, M., Francisco-Luria, M.U., Cordova-Uscanga, R., Rodriguez-Hernandez, A., Mendez, J.D., et al. (2010). Effects of native banana starch supplementation on body weight and insulin sensitivity in obese type 2 diabetics. *International Journal Environ Research Public Health* 7(5), 1953-1962.
- Botchlett, R., & Wu, C. (2018). Diet Composition for the Management of Obesity and Obesity-related Disorders. *Journal of Diabetes Mellitus and Metabolic Syndrome* 3, 10-25.

- BPS (2023). *Statistik Indonesia* 2023. <https://www.bps.go.id/id/publication/2023/02/28/18018f9896f09f03580a614b/statistik-indonesia-2023.html> [Akses 20 Desember 2023].
- Buettner, R., Scholmerich, J., & Bollheimer, L.C. (2007). High-fat diets: modeling the metabolic disorders of human obesity in rodents. *Obesity* 15(4), 798-808.
- Caballero, B., Finglas, P.M. & Toldr, F. (2016). *Encyclopedia of food and health*. Academic Press-Elsevier. Amsterdam.
- Cáceres, N.C.Y., Mahecha, H.S., de Fransisco, A., Mejia, S.M.V., & Moreno, C.D. (2021). Physicochemical, thermal, microstructural and paste properties comparison of four achira (*Canna edulis* sp.) starch ecotypes. *International Journal of gastronomy and Food Science* 25, 100380.
- Cai, C., & Wei, C. (2013). In situ observation of crystallinity disruption patterns during starch gelatinization. *Carbohydrate Polymers* 92(1), 469-478.
- Cai, J., Man, J., Huang, J., Liu, Q., Wei, W., & Wei, C. (2015). Relationship between structure and functional properties of normal rice starches with different amylose content. *Carbohydrate Polymers* 125, 35-44.
- Canfora, E.E., Jocken, J.W., & Blaak, E.E. (2015). Short-chain fatty acids in control of body weight and insulin sensitivity. *Nature Reviews Endocrinology* 11: 577-591.
- Cao, P., Wu, G., Yao, Z., Wang, Z., Li, E., Yu, S., et al. (2022). Effects of amylose and amylopectin molecular structures on starch electrospinning. *Carbohydrate Polymers* 296, 119959.
- Carvalho, F.M.C., Lima, V.C.O., Costa, I.S., Luz, A.B.S., Ladd, F.V.L., Serquiz, A.C., et al. (2019). Anti-TNF- $\alpha$  agent tamarind kunitz trypsin inhibitor improves lipid profile of wistar rats presenting dyslipidemia and diet-induced obesity regardless of ppar- $\gamma$  induction. *Nutrients* 11(3), 512.
- Chakravarty, A., Tandon, M., Attri, S., Sharma, D., Raigond, P., & Goel, G. (2021). Structural characteristics and prebiotic activities of resistant starch from *Solanum tuberosum*: Kufri Bahar, a popular Indian tuber variety. *LWT* 145, 111445.
- Chandrasekara, A., & Kumar, T.J. (2016). Roots and tuber crops as functional foods: a review on phytochemical constituents and their potential health benefits. *International Journal of Food Science* 2016(1), 3631647.
- Chang, Q., Zheng, B., Zhang, Y., & Zeng, H. (2021a). A comprehensive review of the factors influencing the formation of retrograded starch. *International Journal of Biological Macromolecules* 186, 163-173.
- Chang, R., Jin, Z., Lu, H., Qiu, L., Sun, C., & Tian, Y. (2021b). Type III resistant starch prepared from debranched starch: structural changes under simulated saliva, gastric, and intestinal conditions and the impact on short-chain fatty acid production. *Journal of Agricultural and Food Chemistry* 69, 2595-2602.
- Chen, W., Xu, W., Junejo, S.A., Feng, Y., Gao, T., Huang, Q., et al. (2024). Analytical methods for starch retrogradation assessment. *Food Biomacromolecules* 1(2), 107-126.
- Chen, P., Yu, L., Chen, L., & Li, X. (2006). Morphology and microstructure of maize starches with different amylose/amylopectin content. *Starch* 58, 611-615.

- Chia, C.W., & Egan, J.M. (2020). Incretins in obesity and diabetes. *Annals of the New York Academy of Sciences* 1461(1), 104-126.
- Chiranthika, N.N.G., Chandrasekara, A., & Gunathilake, K.D.P.P. (2022). Physicochemical characterization of flours and starches derived from selected underutilized roots and tuber crops grown in Sri Lanka. *Food Hydrocolloids* 124, 107272.
- Chiu, Y.T., & Stewart, M.L. (2013). Effect of variety and cooking method on resistant starch content of white rice and subsequent postprandial glucose response and appetite in humans. *Asia Pacific Journal of Clinical Nutrition* 22, 372-379.
- Chooi, Y.C., Ding, C., & Magkos, F. (2019). The epidemiology of obesity. *Metabolism* 92, 6-10
- Coman, C., & Socaciu, C. (2012). Docking of phytochemicals to the peroxisome proliferator - activated receptor - gamma. *Bulletin UAS VM Agriculture* 69(2), 236-242.
- Corgneau, M., Gaiani, C., Petit, J., Nikolova, Y., Banon, S., Ritie-Pertusa, L., et al. (2019). Digestibility of common native starches with reference to starch granula size, shape and surface features towards guidelines for starch-containing food products. *International Journal of Food Science and Technology* 54, 2132-2140.
- Correia, P.R., & Beirão-da-Costa, M.L. (2012). Starch isolation from chestnut and acorn flours through alkaline and enzymatic methods. *Food and Bioprocess Technology* 90(2), 309-316.
- Costa, M.S., Volanti, D.P., Grossmann, M.V.E., & Franco, C.M.L. (2018). Structural, thermal, and morphological characteristics of cassava amyloextrin. *Journal of the Science of Food and Agriculture* 98(7), 2751-2760.
- Costes, S., Bertrand, G., & Ravier, M.A. (2021). Mechanisms of beta-cell apoptosis in type 2 diabetes-prone situations and potential protection by GLP-1-based therapies. *International Journal of Molecular Sciences* 22(10), 5303.
- Dağ, Z.Ö., & Dilbaz, B. (2015). Impact of obesity on infertility in women. *Journal of the Turkish-German Gynecological Association* 1(16), 111-117.
- de Castro, D.S., Moreira, I.d.S., Silva, L.M.d.M., Lima, J.P., da Silva, W.P., Gomes, J.P., et al. (2019). Isolation and characterization of starch from pitomba endocarp. *Food Research International* 124, 181-187.
- Delzenne, N.M., Olivares, M., Neyrinck, A.M., Beaumont, M., Kjølbæk, L., Larsen, T.M., et al. (2020). Nutritional interest of dietary fiber and prebiotics in obesity: Lessons from the MyNewGut consortium. *Clinical Nutrition* 39(2), 414-424.
- Deng, M., Reddy, C.K., & Xu, B. (2020). Morphological, physico-chemical and functional properties of underutilized starches in China. *International Journal of Biological Macromolecules* 158, 648-655.
- Ding, Y., Huang, J., Zhang, N., Rasmussen, S.K., Wu, D., & Shu, X. (2019). Physicochemical properties of rice with contrasting resistant starch content. *Journal of Cereal Science* 89, 102815.

- Dodevska, M.S., Sobajic, S.S., Djordjevic, P.B., Dimitrijevic-Sreckovic, V.S., Spasojevic-Kalimanovska, V.V., & Djordjevic, B.I. (2016). Effects of total fibre or resistant starch-rich diets within lifestyle intervention in obese prediabetic adults. *European Journal of Nutrition* 55, 127-137.
- Donmez, D., Pinho, L., Patel, B., Desam, P., & Campanella, O.H. (2021). Characterization of starch–water interactions and their effects on two key functional properties: starch gelatinization and retrogradation. *Current Opinion in Food Science* 39, 103-109.
- Dorantes-Fiertes, M.G., Lopez-Mendes, M.C., Martinez-Castellanos, G., Melendez-Armenta, R.A., & Jimenez-Martinez, H-E. (2024). Starch extraction methods in tubers and roots: a systematic review. *Agronomy* 14, 865.
- Dourmashkin, J.T., Chang, G-Q., Gayles, E.C., Hill, J.O., Fried, S.K., Julien, C., et al. (2005). Different forms of obesity as a function of diet composition. *International Journal of Obesity* 29, 1368 – 1378.
- Du, S-K., Jiang H., Ai, Y., & Jane, J-L. (2014). Physicochemical properties and digestibility of common bean (*Phaseolus vulgaris* L.) starches. *Carbohydrate Polymers* 108, 200-205.
- Dundar, A.N. & D. Gocmen (2013). Effects of autoclaving temperature and storing time on resistant starch formation and its functional and physicochemical properties. *Carbohydrate Polymers* 97, 764–771.
- Dupuis, J.H., Liu, Q., & Yada, R.Y. (2014). Methodologies for Increasing the resistant starch content of food starches: a review. *Comprehensive Reviews in Food Science and Food Safety* 13, 1219-1234.
- Erlinawati, I., Lestari, P., Rugayah., & Ermayanti, T.M. (2018). *Taka (Tacca leontopetaloides) untuk kemandirian pangan*. LIPI Press, Jakarta.
- Eshghi, F., Bakhshimoghaddam, F., Rasmi, Y., & Alizadeh, M. (2019). Effects of resistant starch supplementation on glucose metabolism, lipid profile, lipid peroxidation marker, and oxidative stress in overweight and obese adults: randomized, double-blind, crossover trial. *Clinical Nutrition Research* 8(4), 318-328.
- Estiasih, T., Kuliahsari, D.E., Martati, E., & Ahmadi, K. (2022a). Cyanogenic compounds removal and characteristics of non- and pregelatinized traditional detoxified wild yam (*Dioscorea hispida*) tuber flour. *Food Science and Technology* 42, 119121
- Estiasih, T., Ahmadi, K., Sari, I.N.I., Kuliahsari, D.E., & Martati, E. (2022b). Traditional detoxification of wild yam (*Dioscorea hispida* Dennst) tuber in chips processing at East Java, Indonesia. *Journal of Ethnic Foods* 9(49), 1-12.
- Estrada-León, R.J., Moo-Huchin, V.M., Ríos-Soberanis, C.R., Betancur-Ancona, D., May-Hernández, L.H., Carrillo-Sánchez, F.A., et al. (2016). The effect of isolation method on properties of Parota (*Enterolobium cyclocarpum*) starch. *Food Hydrocolloids* 57, 1-9.
- Fabricatore, A.N., & Wadden, T.A. (2006). Obesity. *Annual Review of Clinical Psychology* 2, 357-377.

- Fadda, C., Sanguinetti, A.M., Caro, A.D., Collar, C., & Piga, A. (2014). Bread staling: updating the view. *Comprehensive Review in Food Science and Food Technology* 13(4), 473-492.
- Faridah, D.N., Silitonga, R.F., Indrasti, D., Afandi, F.A., Jayanegara, A., & Anugerah, M.P. (2022). Verification of autoclaving-cooling treatment to increase the resistant starch contents in food starches based on meta-analysis result. *Frontiers* 9, 9074700.
- Fitria, R., Suptiyono., & Sudadi. (2017). Respon pertumbuhan dan hasil garut (*Maranta arundinacea*) terhadap pembungkaran dan pemupukan kalium. *Agrotechnology Research Journal* 1(1), 46-50.
- Federer, W.T. (1991). *Statistics and Society: Data Collection and Interpretation*, Second Edition. Marcel Dekker, New York.
- Freeland, K.R., Wilson, C., & Wolever, T.M.S. (2010). Adaptation of colonic fermentation and glucagon-like peptide-1 secretion with increased wheat fibre intake for 1 year in hyperinsulinaemic human subjects. *British Journal of Nutrition* 103(1), 82-90.
- Fritz, N., & Hazarian, E. (1999). *Mass and weight measurement. Dalam: Webster, J.G (ed). Measurement, instrumentation, and sensors handbook*. CRC. Press.
- Fu, J., Wang, Y., Tan, S., & Wang, J. (2021). Effects of banana resistant starch on the biochemical indexes and intestinal flora of obese rats induced by a high-fat diet and their correlation analysis. *Frontiers in Bioengineering and Biotechnology* 9, 575724.
- Fuentes-Zaragoza, E., Sanchez-Zapata, E., Sendra, E., Sayas, E., Navarro, C., Fernandez-Lopez, J., & Perez-Alvarez, J.A. (2011). Resistant starch as prebiotic: A review. *Starch* 63(7), 406-415.
- Fuentes, C., Kang, I., Lee, J., Song, D., Sjöö, M., Choi, J., et al. (2019). Fractionation and characterization of starch granules using field-flow fractionation (FFF) and differential scanning calorimetry. *Analytical and Bioanalytical Chemistry* 411, 3665-3674.
- Gajda, A.M. (2008). High fat diets for diet-induced obesity models. *A Brief Review of The Scientific Literature*. <https://www.eptrading.co.jp/service/researchdiets/pdf/Obesity%20review.pdf> [Akses 20 Desember 2023].
- Gao, F., Li, X., Li, X., Liu, Z., Zou, X., & Zhang, H. (2022). Physicochemical properties and correlation analysis of retrograded starch from different varieties of sorghum. *International Journal of Food Science & Technology* 57(10), 6678-6689.
- Gao, W., Liu, P., Zhu, J., Huo, H., Li, X., & Cui, B. (2020). Physicochemical properties of corn starch affected by the separation of granule shells. *International Journal of Biological Macromolecules* 164, 242-252.
- Genkina, N.K., Noda, T., Koltisheva, G.I., Wasserman, L.A., Tester, R.F., & Yuryev, V.P. (2003). Effects of growth temperature on some structural properties of crystalline lamellae in starches extracted from sweet potatoes (*Sunnyred* and *Ayamurasaki*). *Starch* 55(8), 350-357.

- Ghibaudi, L., Cook, J., Farley, C., Heek, M.v., & Hwa, J.J. (2002). Fat intake affects adiposity, comorbidity factors, and energy metabolism of *Sprague-Dawley* rats. *Obesity Research* 10(9), 956-963.
- Giuberti, G., Marti, A., Gallo, A., Grassi, S., & Spigno, G. (2019). Resistant starch from isolated white sorghum starch: functional and physicochemical properties and resistant starch retention after cooking. A comparative study. *Starch* 71(7-8), 1800194.
- Gluckmana, P.D., Hansond, M.A., Beedlea, A.S., & Raubenheimer, D. (2008). *Fetal and neonatal pathways to obesity*. Dalam: Korbonits, M. (ed.). *Obesity Metabolism*. Karger, London.
- Godet, M.C., Buleon, A., Tran, V., & Colonna, P. (1993). Structural features of fatty acid-amylose complexes. *Carbohydrate Polymers* 21(2-3), 91-95.
- Goni, I., Garcia-Diz, L., Manas, E., & Saura-Calixto, F. (1996). Analysis of resistant starch: method for foods and food products. *Jornal Food Chemistry* 56(4), 445-449.
- Govindaraju, I., Zhuo, G-Y., Chakraborty, I., Melanthota, S.K., Mal, S.S., Sarmah, B., et al. (2022). Investigation of structural and physico-chemical properties of rice starch with varied amylose content: A combined microscopy, spectroscopy, and thermal study. *Food Hydrocolloids* 122, 107093.
- Gu, H., Yao, H., & Wang, F. (2018). Structural and physicochemical properties of resistant starch from Chinese chestnut (*Castanea mollissima*) prepared by autoclaving treatment and pullulanase hydrolysis. *Journal of Food Processing and Preservation* 42(1), 13364.
- Gujral, H.S., Sharma, P., Kaur, H., & Singh, J. (2013). Physiochemical, pasting, and thermal properties of starch isolated from different barley cultivars. *International Journal of Food Properties* 16(7), 1494-1506.
- Gunaratne, A., Bentota, A., Cai, Y.Z., Collado, L., & Corke, H. (2011). Functional, digestibility, and antioxidant properties of brown and polished rice flour from traditional and new-improved varieties grown in Sri Lanka. *Starch* 63(8), 485-492.
- Guo, J., Tan, L., & Kong, L. (2021). Impact of dietary intake of resistant starch on obesity and associated metabolic profiles in human: a systematic review of the literature. *Critical Review in food Science and Nutritions* 61(6), 889-905.
- Guo, K., Liu, T., Xu, A., Zhang, L., Bian, X., & Wei, C. (2019). Structural and functional properties of starches from root tubers of white, yellow, and purple sweet potatoes. *Food Hydrocolloids* 89, 829-836.
- Guo, K., Zhang, L., Bian, X., Cao, Q., & Wei, C. (2020). A-, B- and C-type starch granules coexist in root tuber of sweet potato. *Food Hydrocolloids* 98, 105279
- Guo, P., Yu, J., Wang, S., Wang, S., & Copeland, L. (2018). Effects of particle size and water content during cooking on the physicochemical properties and *in vitro* starch digestibility of milled durum wheat grains. *Food Hydrocolloids* 77, 445-453.
- Gupta, R.K., Guha, P., & Srivastav, P.P. (2022). Natural polymers in bio-degradable/edible film: A review on environmental concerns, cold plasma technology and nanotechnology application on food packaging- A recent trends. *Food Chemistry Advances* 1, 100135.

- Gutiérrez-Cortez, E., Hernandez-Becerra, E., Londoño-Restrepo, S.M., & Rodríguez-García. (2021). Physicochemical characterization of Amaranth starch insulated by mechanical separations. *International Journal of Biological Macromolecules* 177, 430-436.
- Gwer, J.H., Enujiugha, V.N., & Adeniyi, A.B. (2018). Nutritional and in vitro glycemic properties of selected indigenous tubers. *Asian Food Science Journal* 2(2): 1-8.
- Hadzhibozheva, P., Pashova-Stoyanova, L., Tsokeva, Z., Ganeva, M., Nancheva, K., Ilieva, G., et al. (2023). Appetite-regulating hormones in rats with fructose-induced metabolic changes. *Pharmacia* 70(1), 1-7
- Hammond, J., & Halnan, E.T. (1950). *A course of practical physiology for agricultural students*. Cambridge, University Press.
- Han, X-Z., Benmoussa, M., Gray, J.A., BeMiller, J.N., & Hamaker, B.R. (2005). Detection of proteins in starch granule channels. *Cereal Chemistry* 82(4), 351-355.
- Handayani, D., Ramadhan, A., Anindyanti, D., Innayah, A.M., Sulistyowati, E., & Kusumastuty, I. (2020). Effects of dietary brown rice on carcass composition and nitric oxide (NOx) metabolite levels in high-fat high- fructose diet-induced *Sprague Dawley* rats as obesity model. *Journal of Physics: Conferences Series* 1665, 012007.
- Haralampu, S.G. (2000). Resistant starch-a review of the physical properties and biological impact of RS3. *Carbohydrate Polymers* 41(3), 285-292.
- Hariri, N., & Thibault, L. (2010). High-fat diet-induced obesity in animal models. *Nutrition Research Reviews* 23(2), 270-299.
- He, R., Fu, N-F., Chen, H-M., Ye, J-Q., Chen, L-Z., Pu, Y-F., et al. (2020). Comparison of the structural characteristics and physicochemical properties of starches from sixteen cassava germplasms cultivated in China. *International Journal of Food Properties* 23(1), 693-707.
- He, W., & Wei, C. (2017). Progress in C-type starches from different plant sources. *Food Hydrocolloids* 73, 162-175.
- Hendry., Wardana, A.A., & Surono, I.S. (2022). Effects of various cooling temperatures on resistant starch formation and pasting behaviour of autoclaved taro flour. *IOP Conference Series: Earth and Environmental Science* 998, 012053.
- Herawati, E.R.N., Ariani, D., Nurhayati, R., Miftakhussolikhah, M., Na'imah, H., & Marsono, Y. (2020). Effect of autoclaving-cooling treatments on chemical characteristic and structure of tacca (*Tacca leontopetaloides*) starch. *5<sup>th</sup> International Conference on Food, Agriculture and Natural Resources* 194, 169-172.
- Hil, J.O., Wyatt, H.R., & Peters, J.C. (2012). Energy balance and obesity. *Circulation* 126(1), 126-132.
- Hoover, R. (2001). Composition, molecular structure and physicochemical properties of tuber and root starches: a review. *Carbohydrate Polymers* 45(3), 253-267.

- Hoover, R., Hughes, T., Chung, H.J., & Liu, Q. (2010). Composition, molecular structure, properties, and modification of pulse starches: A review. *Food Research International* 43, 399-413.
- Huang, J., Shang, Z., Man, J., Liu, Q., Zhu, C., & Wei, C. (2015). Comparison of molecular structures and functional properties of high-amylose starches from rice transgenic line and commercial maize. *Food Hydrocolloids* 46, 172-179.
- Huang, R., Zhu Z., Wu, S., Wang, J., Chen, M., Liu, W., et al. (2022). Polysaccharides from *Cordyceps militaris* prevent obesity in association with modulating gut microbiota and metabolites in high-fat diet-fed mice. *Food Research International* 157, 111197.
- Huang, Z., Huang, L., Waters, M.J., & Chen, C. (2020). Insulin and growth hormone balance: implications for obesity. *Trends in Endocrinology & Metabolism* 31(9), 642-654.
- Hudish, L.I., Reusch, J.E.B., & Sussel, L. (2019).  $\beta$ -Cell dysfunction during progression of metabolic syndrome to type 2 diabetes. *Journal of Clinical Investigation* 129(10), 4001-4008.
- Huo, Y., Zhang, B., Niu, M., Jia, C., Zhao, S., Huang, Q., et al. (2018). An insight into the multi-scale structures and pasting behaviors of starch following citric acid treatment. *International Journal of Biological Macromolecules* 116, 793-800.
- Hutching, J.B. (1999). *Food colour and appearance*. 2<sup>nd</sup> edition. An Aspen Publ. Inc., Gaithersburg, Maryland.
- IDF (2006). The IDF concensus worldwide definition of the metabolic syndrome. *International Diabetes Federation*.
- Ieamkheng, S., Santibenchakul, S., Poonpaerdchon, S., Some, B., & Sooksawat, N. (2024). Growth performance and starch yield potential of arrowroot (*Maranta arundinacea*) from various locations in Thailand. *Biodiversitas* 25(10), 3750-3057.
- Isah, I., Oshodi, A.A., & Atasie, V.N. (2017). Physicochemical properties of cross linked acha (*Digitaria exilis*) starch with citric acid. *Chemistry International* 3(2), 150-157.
- Izquierdo, A.G., Crujeiras, A.B., Casanueva, F.F., & Carreira, M.C. (2019). Leptin, obesity, and leptin resistance: where are we 25 years later? *Nutrient* 11, 2704.
- Jalaba, S., Trudeau, H., & Carlson, S. (2022). Obesity prevention. *Physician Assistant Clinics* 7(1), 43-58.
- Jan, K.N., Panesar, P.S., Rana, J.C., & Singh, S. (2017). Structural, thermal and rheological properties of starches isolated from Indian quinoa varieties. *International Journal of Biological Macromolecules* 102, 315-322.
- Ji, Y., Ma, N., Zhang, J., Wang, H., Tao, T., Pei, F., et al. (2021). Dietary intake of mixture coarse cereals prevents obesity by altering the gut microbiota in high-fat diet fed mice. *Food and Chemical Technology* 147, 111901.
- Jia, S., Zhao, H., Tao, H., Yu, B., Liu, P., & Cui, B. (2022). Influence of corn resistant starches type III on the rheology, structure, and viable counts of set yogurt. *International Journal of Biological Macromolecules* 208, 10-18.

- Jiamjariyatam, R., Kongpensook, V., & Pradipasena, P. (2015). Effects of amylose content, cooling rate and aging time on properties and characteristics of rice starch gels and puffed products. *Journal of Cereal Sciences* 61, 16-25.
- Jiang, F., Du, C., Jiang, W., Wang, L., & Du, S.K. (2020). The preparation, formation, fermentability, and applications of resistant starch. *International Journal of Biological Macromolecules* 150, 1155-1161.
- Jo, J., Gavrilova, O., Pack, S., Jou, W., Mullen, S., Sumner, A.E., et al. (2009). Hypertrophy and/or hyperplasia: dynamics of adipose tissue growth. *PLoS Computational Biology* 5(3), 1000324.
- Johnston, K.L., Thomas, E.L., Bell, J.D., Frost, G.S., & Robertson, M.D. (2010). Metabolism Resistant starch improves insulin sensitivity in metabolic syndrome. *Diabetic Medicine* 27, 391-397.
- Jungheim, E.S., Schon, S.B., Schulte, M.B., DeUgarta, D.A., Fowler, S.A., & Tuuli, M.G. (2013). IVF outcomes in obese donor oocyte recipients: a systematic review and meta-analysis. *Human Reproduction* 28(10), 2720-2727.
- Kang, X., Gao, W., Cui, B., & El-Aty, A.M.A. (2023). Structure and genetic regulation of starch formation in sorghum (*Sorghum bicolor* (L.) Moench). Endosperm: A review. *International Journal of Biological Macromolecules* 239, 124315.
- Karow, M.F., Santos, F.N.d., Biduski, B., Krolow, A.C.R., Silva, F.T.d., Halal, S.L.M., et al. (2024). Natural fermentation of potato (*Solanum tuberosum* L.) starch: Effect of cultivar, amylose content, and drying method on expansion, chemical and morphological properties. *International Journal of Biological Macromolecules* 261, 129608.
- Kawai, T., Autieri, M.V., & Scalia, R. (2021). Adipose tissue inflammation and metabolic dysfunction in obesity. *American Journal of Physiology-Cell Physiology* 320(3), 375-91.
- Keenan, M.J., Martin, R.J., Raggio, A.M., McCutcheon, K.L., Brown, I.L., & Birkett, A. (2012). High-amylose resistant starch increases hormones and improves structure and function of the gastrointestinal tract: a microarray study. *Journal of Nutrigenetics and Nutrigenomics* 5(1), 26-44.
- Kelly, E. B. (2006). *Obesity*. Greenwood Press. Westport, Connecticut-London.
- Kemenkes (2014). Buku studi diet total: survei konsumsi makanan individu Indonesia 2014. Lembaga Penerbitan Badan Penelitian dan Pengembangan kesehatan. ISBN 978-602-1099-31-5.
- Kemenkes (2018). Laporan Riset Kesehatan Dasar 2018. <https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/1/Laporan%20Risikesdas%202018%20Nasional.pdf> [Akses 20 Desember 2023].
- Kemenkes (2019). Permenkes RI No 28 Tahun 2019: Angka Kecukupan Gizi yang Dianjurkan untuk Masyarakat Indonesia. [http://hukor.kemkes.go.id/uploads/produk\\_hukum/PMK\\_No\\_28\\_Th\\_2019\\_ttg\\_Angka\\_Kecukupan\\_Gizi\\_Yang\\_Dianjurkan\\_Untuk\\_Masyarakat\\_Indonesia.pdf](http://hukor.kemkes.go.id/uploads/produk_hukum/PMK_No_28_Th_2019_ttg_Angka_Kecukupan_Gizi_Yang_Dianjurkan_Untuk_Masyarakat_Indonesia.pdf) [Akses 21 Januari 2023].
- Kemenkes (2023). Laporan Kesehatan Indonesia 2023. [https://drive.google.com/file/d/1rjNDG\\_f8xG6-Y9wmhJUnXhJ-vUFevVJC/view](https://drive.google.com/file/d/1rjNDG_f8xG6-Y9wmhJUnXhJ-vUFevVJC/view) [Akses 20 Desember 2023].

- Kim, H., Lee, K.H., Kim, J.Y., Lim, W.J., & Lim, S.T. (2012). Characterization of nanoparticles prepared by acid hydrolysis of various starches. *Starch* 64(5), 367-373.
- Kim, J-Y., Park, D-J., & Lim, S-T. (2008). Fragmentation of waxy rice starch granules by enzymatic hydrolysis. *Cereal Chemistry* 85(2), 182-187.
- Kim, N.H., Kim, J.H., Lee, S., Lee, H., Yoon, J.W., Wang, R., et al. (2010). Combined effect of autoclaving-cooling and cross-linking treatments of normal corn starch on the resistant starch formation and physicochemical properties. *Starch* 62(7), 358-363.
- Kim, Y-Y., Woo, K.S., & Chung, H-J. (2018). Starch characteristics of cowpea and mungbean cultivars grown in Korea. *Food Chemistry* 263, 104-11.
- Kisioglu, B., & Nergiz-Unal, R. (2023). Potential effect of maternal dietary sucrose or fructose syrup on CD36, leptin, and ghrelin-mediated fetal programming of obesity. *Nutritional Neuroscience* 23(3), 210-220.
- Kleinert, M., Clemmensen, C., Hofmann, S.M., Moore, M.C., Renner, S., Woods, S.C., et al. (2018). Animal models of obesity and diabetes mellitus. *Nature Reviews Endocrinology* 14, 140-162.
- Klingbeil, E.A., Cawthon, C., Kiskland, R., & Serre, C.B.de.L. (2019). Potato-resistant starch supplementation improves microbiota dysbiosis, inflammation, and gut-brain signaling in high fat-fed rats. *Nutrients* 11, 2710.
- Kong, Q., Xum J., Liang, Y., Xie, F., Tian, F., Zhou, S., et al. (2015). Lamellar structure change of waxy corn starch during gelatinization by time-resolved synchrotron SAXS. *Food Hydrocolloids* 62, 43048.
- Kremers, S., Reubsæet, A., Martens, M., Gerards, S., Jonkers, R., Candel, M., et al. (2010). Systematic prevention of overweight and obesity in adults: a qualitative and quantitative literature analysis. *Obesity Reviews* 11(5), 371-379.
- Kringel, D.H., Halal, S.L.M.E., Zavareze, E.d.R., & Dias, A.R.G. (2020). Methods for the extraction of roots, tubers, pulses, pseudocereals, and other unconventional starches sources: a review. *Starch* 72(11-12), 1900234
- Kumanyika, S & Brownson, R.C. (2007). *Handbook of obesity prevention*. Springer.
- Kumari, B., & Sit, N. (2023). Comprehensive review on single and dual modification of starch: Methods, properties and applications. *International Journal of Biological Macromolecules* 253: 126952.
- Kumoro, A.C., Retnowati, D.S., Ratnawati, R., & Widiyanti, M. (2021). Estimation of aqueous solubility of starch from various botanical sources using Flory Huggins theory approach. *Chemical Engineering Communications* 208(5), 624-635.
- Kurniawati, A.D., Kusumastuty, I., & Handayani, D. (2021). Effects of long term HFHF diet on HOMA-IR levels and pancreatic histopathology on SD rats. *Metabolism* 116, 154559.
- Kusnandar, F. (2020). *Kimia Pangan Komponen Makro, Eds 2*. Bumi Aksara.
- Kusnandar, F., Herawati, D., Lioe, H.N., Palupi, N.S., & Budijanto, S. (2024). *Kimia dan Teknologi Pati*. IPB Press.

- Lan, X., Li, Y., Xie, S., & Wang, Z. (2015). Ultrastructure of underutilized tuber starches and its relation to physicochemical properties. *Food Chemistry* 188, 632-640
- Lattimer, J.M., & Haub, M.D. (2010). Effects of dietary fiber and its components on metabolic health. *Nutrients* 2(12), 1266-1289.
- Lazim, A.M., Sharlina, M.S.E., Azfaralariff, A., Yaacob, W.A., Lim, S.J., Fazry, S., et al. (2021). Structure, physicochemical and toxicity properties of underused Malaysian native Tuber's starch (*Dioscorea Pentaphylla*). *Journal of King Saud University-Science* 33, 101501.
- Lee, B-H., & Lee, Y-T. (2017). Physicochemical and structural properties of different colored sweet potato starches. *Starch* 69(3-4), 1600001.
- Lee, H-B., Kim, H.R., Kang, M-C., Jeong, D., Choi, H-D., Hong, J.S., et al. (2023). Structural characteristics of resistant starch-enriched rice during digestion and its effects on gut barrier function in high-fat induced obese mice. *Food Research International* 170, 113011.
- Lee, K.Y., Yoo, S-H., & Lee, H.G. (2012). The effect of chemically modified resistant starch, RS type-4, on body weight and blood lipid profiles of high fat diet-induced obese mice. *Starch* 64, 78-85.
- Lee, S.Y., Lee, K.Y., & Lee, H.G. (2018). Effect of different pH conditions on the in vitro digestibility and physicochemical properties of citric acid-treated potato starch. *International Journal of Biological Macromolecules* 107, 1235-1241.
- Lei, Z., Ting, L.H., Li, S., Chen, F.Q., Ling, Q.L., & Ping, J.W. (2015). Effect of dietary resistant starch on prevention and treatment of obesity-related diseases and its possible mechanisms. *Biomedical and Environmental Sciences* 28(4), 291-297.
- Leonel, M., do Carmo, E.L., Fernandes, A.M., Soratto, R.P., Eburneo, J.A.M., Garcia, E.L., et al. (2017). Chemical composition of potato tubers: the effect of cultivars and growth conditions. *Journal of Food Science and Technology* 54(8), 2372-2378.
- Lesa, K.N., Ahmad, N., Mayangsari, Y., Cahyanto, M.N., & Saputra, W.D. (2024). Anti-diabetic effect of okara noodles on streptozotocin-nicotinamide induced diabetic rats. *Trends in Sciences* 21(5), 7428.
- Lewis, S., Thomas, S.L., Blood, R.W., Castle, D.J., Hyde, J., & Komesaroff, P.A. (2011). How do obese individuals perceive and respond to the different types of obesity stigma that they encounter in their daily lives? A qualitative study. *Social Science & Medicine* 73(9), 1349-1356
- Li, H., Gui, Y., Li, J., Zhu, Y., Cui, B., & Guo, L. (2020). Modification of rice starch using a combination of autoclaving and triple enzyme treatment: Structural, physicochemical and digestibility properties. *International Journal of Biological Macromolecules* 144, 500-508.
- Li, W., Xiao, X., Zhang, W., Zheng, J., Luo, Q., Ouyang, S., et al. (2014). Compositional, morphological, structural and physicochemical properties of starches from seven naked barley cultivars grown in China. *Food Research International* 58, 7-14.

- Li, X. (2018). Resistant starch and its applications. *Dalam: Jin, Z. (eds). Functional starch and applications in food*, hal 63-90. Springer, Singapore.
- Li, Z., Yi, C.X., Katiraei, S., Kooijman, S., Zhou, E., Chung, C.K., et al. (2018). Butyrate reduces appetite and activates brown adipose tissue via the gut-brain neural circuit. *Gut Microbiota* 67, 1269-1279.
- Li, C., Gong, B., Hu, Y., Liu, X., Guan, X., Zhang, B. (2020). Combined crystalline, lamellar and granular structural insights into in vitro digestion rate of native starches. *Food Hydrocolloids* 105, 105823.
- Li, X., Zhang, X., Yang, W., Guo, L., Huang, L., Li, X., et al. (2021). Preparation and characterization of native and autoclaving-cooling treated *Pinellia ternate* starch and its impact on gut microbiota. *International Journal of Biological Macromolecules* 182, 1351-1361.
- Li, Y., Hu, A., Zheng, J., & Wang, X. (2019). Comparative studies on structure and physiochemical changes of millet starch under microwave and ultrasound at the same power. *International Journal of Biological Macromolecules* 141, 76-84.
- Liang, D., Zhang, L., Chen, H., Zhang, H., Hu, H., & Dai, X. (2021). Potato resistant starch inhibits diet-induced obesity by modifying the composition of intestinal microbiota and their metabolites in obese mice. *International Journal of Biological Macromolecules* 180, 458-469.
- Liao, C-C., Chen, S-Y., Chen, Y-Y., Huang, C-C., Pan, R-Y., & Yen, G-C. (2025). Characterization of a novel type 4 resistant starch from tapioca and its obesity-preventive effects through gut microbiota modulation in high-fat diet-treated mice. *International Journal of Biological Macromolecules* 295, 139577.
- Lim, T.K. (2016). Edible medicinal and non-medicinal plants: *Tacca leontopetaloides*, hal: 301-307. Springer, New York.
- Liu, H., Zhang, M., Ma, Q., Tian, B., Nie, C., Chen, Z., et al. (2020). Health beneficial effects of resistant starch on diabetes and obesity via regulation of gut microbiota: a review. *Food & Function* 11, 5749-5767.
- Liu, R., Zhang, Y., Hu, H., Gan, T., & Huang, Z. (2023). Retrogradation behavior of starch dough prepared from damaged cassava starch and its application in functional gluten-free noodles. *International Journal of Biological Macromolecules* 236, 123996.
- Liu, X., Chao, C., Yu, J., Copeland, L., & Wang, S. (2021). Mechanistic studies of starch retrogradation and its effects on starch gel properties. *Food Hydrocolloids* 120, 106914.
- Liu, X., Ma, Q., Cheng, D., Zhang, F., Li, Y., Wang, W. et al. (2023a). Preparation and characterization of type 3 resistant starch by ultrasound-assisted autoclave gelatinization and its effect on steamed bread quality. *Ultrasonics Sonochemistry* 92, 106248.
- Liu, Y., Li, Y., Cheng, B., Feng, S., Zhu, X., Chen, W., et al. (2022). Comparison of visceral fat lipolysis adaptation to high-intensity interval training in obesity-prone and obesity-resistant rats. *Diabetology & Metabolic Syndrome* 14(62), 14-62.

- Lobley, G.E., Holtrop, G., Bremner, D.M., Calder, A.G., Milne, E., & Johnstone, A.M. (2013). Impact of short term consumption of diets high in either non-starch polysaccharides or resistant starch in comparison with moderate weight loss on indices of insulin sensitivity in subjects with metabolic syndrome. *Nutrient* 5(6), 2144-2172.
- Longas, F.F., & Diaz, A.P. (2020). Accumulation dynamics and physicochemical variability of starch in cultivars of *Canna edulis* Ker. *Pesquisa Agropecuária Tropical* 50, 58827.
- Luo, Z., He, X., Fu, X., Luo, F., & Gao, Q. (2006). Effect of microwave radiation on the physicochemical properties of normal maize, waxy maize and amylo maize starches. *Starch* 58(9), 468-474.
- Lutz, T.A., & Woods, S.C. (2012). Overview of animal models of obesity. *Current Protocols in Pharmacology* 58(1), 1-18.
- Ma, Z., Hu, X., & Boye, H.I. (2020). Research advances on the formation mechanism of resistant starch type III. *Critical Review in Food Science and Nutrition* 60(2), 276-297.
- Ma, Z., Yin, X., Hu, X., Li, X., Liu, L., & Boye, J.I. (2018). Structural characterization of resistant starch isolated from Laird lentils (*Lens culinaris*) seeds subjected to different processing treatments. *Food Chemistry* 263, 163-170.
- Maki, K.C., Pelkman, C.L., Finocchiaro, E.T., Kelley, K.M., Lawless, A.I., Schild, A.L., et al. (2012). Resistant starch from high-amylose maize increases insulin sensitivity in overweight and obese men 1–3. *The Journal of Nutrition and Disease* 142(4), 717-723.
- Malone, J.I., & Hansen, B.C. (2018). Does obesity cause type 2 diabetes mellitus (T2DM)? Or is it the opposite? *Pediatric Diabetes* 20(1), 5-9.
- Marques, C., Meireles, M., Norberto, S., Leite, J., Freitas, J., Pestana, D., et al. (2016). High-fat diet-induced obesity Rat model: a comparison between Wistar and Sprague-Dawley Rat. *Adipocyte* 5(1), 11-21.
- Marta, H., Cahyana, Y., Bintang, S., Soeherman, G.P., & Djali, M. (2022). Physicochemical and pasting properties of corn starch as affected by hydrothermal modification by various methods. *International Journal of Food Properties* 25(1), 792-812.
- Martinez, O.D.M., Theodoro, J.M.V., Grancieri, M., Toledo, R.C.L., Queiroz, V.A.C., Barros, F.A.R.d., et al. (2021). Dry heated whole sorghum flour (BRS 305) with high tannin and resistant starch improves glucose metabolism, modulates adiposity, and reduces liver steatosis and lipogenesis in Wistar rats fed with a high-fat high-fructose diet. *Journal of Cereal Science* 99, 103201.
- Martins, P.C., Gutkoski, L.C., & Martins, V.G. (2018). Impact of acid hydrolysis and esterification process in rice and potato starch properties. *International Journal of Biological Macromolecules* 120, 959-965.
- Meenu, M., & Xu, B. (2019). A critical review on anti-diabetic and anti-obesity effects of dietary resistant starch. *Critical Reviews in Food Science and Nutrition* 59(18), 3019-3031.

- Miao, M., Jiang, B., Cui, S.W., Zhang, T., & Jin, Z. (2015). Slowly digestible starch-A review. *Critical Reviews in Food Science and Nutrition* 55(12), 1642-1657.
- Mihardja, L., Soetrisno, U., & Soegondo. (2014). Prevalence and clinical profile of diabetes mellitus in productive aged urban Indonesians. *Journal of Diabetes Investigation* 5(5), 507-512.
- Mun, S-H., & Shin, M. (2006). Mild hydrolysis of resistant starch from maize. *Food Chemistry* 96(1), 115-121.
- Murugesan, S., Nirmalkar, K., Hoyo-Vadillo, C., Garcia-Espita, M., Ramírez-Sánchez, D., & García-Mena, J. (2018). Gut microbiome production of short-chain fatty acids and obesity in children. *European Journal of Clinical Microbiology & Infectious Diseases* 37, 621-625.
- Mutiso, S.K., Rono, D.K., & Buckachi, F. (2014). Relationship between anthropometric measures and early electrocardiographic changes in obese rats. *BMC Research Notes* 7, 1-7.
- Nadiha, M.Z.N., Bhat, R., & Karim, A.A. (2010). Comparative susceptibilities of sago, potato and corn starches to alkali treatment. *Food Chemistry* 121(4), 1053-1059.
- Nagar, C.K., Dash, S.K., Rayaguru, K., Pal, U.S., & Nedunchezhiyan. (2021). Isolation, characterization, modification and uses of taro starch: A review. *International Journal of Biological Macromolecules* 192, 574-589.
- Nasrin, T.A.A., & Anal, A.K. (2014). Resistant starch III from culled banana and its functional properties in fish oil emulsion. *Food Hydrocolloids* 35, 403-409
- Navaf, M., & Sunooj, K.V. (2024). Physical modifications of starch. *Dalam. Mazumder, N., & Rahman, M.H. Advanced Research in Starch*, hal 1-45. Springer, Singapore.
- Ngobese, N., Workneh, T.S., & Alimi, B.A. (2017). Nutrient composition and starch characteristics of eight European potato cultivars cultivated in South Africa. *Journal of Food Composition and Analysis* 55, 1-11.
- Nhan, M.T., & Copeland, L. Effects of growing environment on properties of starch from five Australian wheat varieties. *Cereal Chemistry* 91(6), 587-594.
- Nicolaidis, S. (2019). Environment and obesity. *Metabolism* 100, 153942.
- NIDDK. (2023). Health Risk of Overweih & Obesity. <https://www.niddk.nih.gov/health-information/weight-management/adult-overweight-obesity/health-risks>. [Akses 20 Desember 2023].
- Novelli, E.L.B., Diniz, Y.S., Galhardi, C.M., Ebaid, G.M.X., Rodrigues, H.G., Mani, F., et al. (2007). Anthropometrical parameters and markers of obesity in rats. *Laboratory Animals* 41(1), 1-9.
- Nurhayati, R., Suryadi, A.N., Ariani, D., Herawati, E.R.N., Miftakhussolikah., & Marsono, Y. (2022). Resistant starch in native *Tacca leontopetaloides* starch and its various modified starches. *International Food Research Journal* 29(3), 667-675.
- Nurhidajah., & Nurrahman. (2016). Efek hipoglikemik kecambah beras merah pada tikus yang diinduksi STZ-NA dengan parameter kadar insulin, indeks HOMA-IR dan HOMA  $\beta$ . *agriTECH* 36(4), 433-439.

- Nwokocha, L.M., Senan, C., & Williams, P.A. (2011). Structural, physicochemical and rheological characterization of *Tacca involucrata* starch. *Carbohydrate Polymers* 86, 789-796.
- Obadi, M., Qi, Y., & Xu, B. (2023). High-amylose maize starch: Structure, properties, modifications and industrial applications. *Carbohydrate Polymers* 299, 120185.
- Ogbonna, A.I., Adepoju, S.O., Ogbonna, C.I.C., Yakubu, T., Itelima, J.U., & Dajin, V.Y. (2017). Root tuber of *Tacca leontopetaloides* L. (Kunze) for food and nutritional security. *Microbiology: Current Research* 1(1), 1-7.
- Ohkuma, K., & Wakabayashi, S. (2000). *Fibersol-2: a soluble, non-digestible, starch-derived dietary fiber*. Dalam. Advanced dietary fiber technology. Hoboken: McCleary, B.V., & Prosky, L. hal: 509-523. Wiley-Blackwell Science Ltd.
- Oktaviani, S.R., Faridah, D.N., Wulandari, N., Afandi, F.A., & Jayanegara, A. (2023). Resistant starch content of dual modification autoclaving-cooling and pullulanase debranching on various carbohydrate sources: a systematic review. *International Journal of Food Science and Technology* 58, 6890-6901.
- Oliveira, A.R., Ribeiro, A.E.C., Gondim, I.C., Santos, E.A.d., Oliveira, E.R.d., & Caliari, M. (2021). Isolation and characterization of yam (*Dioscorea alata* L.) starch from Brazil. *LWT – Food Science and Technology* 149, 111843.
- Omoja, M.O. (2013). Tacca starch: a review of its production, physicochemical properties, modification and industrial uses. *African Journal of food, Agriculture, Nutrition and Development* 13(4), 7972-85
- Ovando-Martínez, M., Bello-Pérez, L.A., Whitney, K., Osorio-Díaz, P., & Simsek, S. (2011). Starch characteristics of bean (*Phaseolus vulgaris* L.) grown in different localities. *Carbohydrate Polymer* 85(1), 54-64.
- Oyeyinka, S.A., Singh, S., & Amonsou, E.O. (2017). Physicochemical properties of starches extracted from bambara groundnut landraces. *Starch* 69(3-4), 1600089.
- Ozturk, S., Koksel, H., & Ng, P.K.W. (2011). Production of resistant starch from acid-modified amylopectin starches with enhanced functional properties. *Journal of Food Engineering* 103(2), 156-164.
- Pacheco, M.T., Moreno, F.J., Moreno, R., Villamiel, M., & Hernandez-Hernandez, O. (2019). Morphological, technological and nutritional properties of flours and starches from mashua (*Tropaeolum tuberosum*) and melloco (*Ullucus tuberosus*) cultivated in Ecuador. *Food Chemistry* 301, 125268.
- Palacios-Fonseca, A.J., Castro-Rosas, J., Gomez-Aldapa, C.A., Tovar-Benitez, T., Millan-malo, B.M., Real A.d., et al. (2013). Effect of the alkaline and acid treatments on the physicochemical properties of corn starch. *CyTA - Journal of Food* 11(1), 67-74.
- Pan, W-H., & Yeh, W-T. (2018). How to define obesity? Evidence-based multiple action points for public awareness, screening, and treatment: an extension of Asian-Pacific recommendations. *Asia Pacific Journal Clinical Nutrition* 17(3), 370-374.

- Panghal, A., Munezero, C., Sharma, P., & Chhikara, N. (2019). Cassava toxicity, detoxification and its food applications: a review. *Toxin Reviews* 40(1), 1-16.
- Patindol, J.A., Siebenmorgen, T.J., & Wang, Y-J. (2015). Impact of environmental factorson rice starch structure: A review. *Starch* 67: 42-54.
- Pelpolage, S., Nakata, K., Shinbayashi, Y., Murayama, D., Tani, M., Yamauchi, H., et al. (2016). Comparison of pasting and thermal properties of starches isolated from four processing type potato varieties cultivated in two locations in Hokkaido. *Food Science and Technology Research* 22(5), 687-693.
- Phillips, G.O., & Cui, S.W. (2011). An introduction: Evolution and finalization of the regulatory definition of dietary fiber. *Food Hydrocolloids* 25(2), 139-143.
- Pineda-Gomez, P., Gonzalez, N.M., Contreras-Jimenez, B., & Rodriguez-Garcia, M.E. (2020). Physicochemical characterization of starches from six potato cultivars native to the Colombian Andean Region. *Potato Research* 64, 21-39.
- Pranoto, Y. (2022). *Starch and its derivatives as potential source of prebiotics. Dalam.* Panesar, P.S., & Anal, A.K. (Ed). Probiotics, prebiotics and synbiotics: Technological Advancements Toward Safety and Industrial applications, hal 378-406. Jhon Wiley & Sons Ltd.
- Pranoto, Y., Rahmayuni., Haryadi., & Rakshit, S.K. (2014). Physicochemical properties of heat moisture treated sweet potato starches of selected Indonesian varieties. *International Food Research Journal* 21(5), 2031-2038.
- Pratama, F., & Syafutri, M.I. (2019). Effect of autoclaving-cooling on the physical properties, microstructure and starch hydrolysis of milled rice. *Carpathian Journal of Food Science and Technology* 11(1), 83-93.
- Pratiwi, W.S.W., Anal, A.K., & Putra, S.R. (2015). Production by lintnerization-autoclaving and physicochemical characterization of resistant starch III from sago palm (*Metroxylon sagu* Rottb). *Indonesian Journal of Chemistry* 15(3), 295-304.
- Puddu, A., Sanguineti, R., Montecucco, F., & Viviani, G.L. (2014). Evidence for the gut microbiota short-chain fatty acids as key pathophysiological molecules improving diabetes. *Mediators of Inflammation* 162021, 1-9.
- Puspitasari, A., Pranoto, P., Triwitono, P., & Fibri, D.L.N. (2025). Effects of citric acid concentration and hydrolysis time on gembili (*Dioscorea esculenta*) starch from Indonesia. *Preventive Nutrition and Food Science* 30(2), 152-164
- Qiao, D., Yu, L., Liu, H., Zou, W., Xie, F., Simon, G., et al. (2016). Insights into the hierarchical structure and digestion rate of alkali-modulated starches with different amylose contents. *Carbohydrate Polymers* 144, 271-281.
- Rafiq, S.I., Singh, S., & Saxena, D.C. (2016). Effect of heat-moisture and acid treatment on physicochemical, pasting, thermal and morphological properties of horse chestnut (*Aesculus indica*) starch. *Food Hydrocolloid* 57, 103-113.
- Raigond, P., Ezekiel, R., & Raigond, B. (2015). Resistant starch in food: a review. *Journal of the Science of Food and Agriculture* 95(10), 1968-1978.
- Rashid, R.S.A., Mohamed, A.M.D., Achudan, S.N., & Mittis, P. (2020). Physicochemical properties of resistant starch type III from sago starch at different palm stages. *Materials Today: Procesings* 31, 150-154.

- Raso, G.M., Simeoli, R., Russo, R., Iacono, A., Santoro, A., Paciello, O., et al. (2013). Effects of sodium butyrate and its synthetic amide derivative on liver inflammation and glucose tolerance in an animal model of steatosis induced by high fat diet. *Plos One* 8(7), 1-13.
- Ratnaningsih, N., Suparmo., Harmayani, E., & Marsono, Y. (2016). Composition, microstructure, and physicochemical properties of starches from Indonesian cowpea (*Vigna unguiculata*) varieties. *International Food Research Journal* 23(5), 2041-2049.
- Ratnaningsih, N., Suparmo., Harmayani, E., & Marsono, Y. (2020). Physicochemical properties, in vitro starch digestibility, and estimated glycemic index of resistant starch from cowpea (*Vigna unguiculata*) starch by autoclaving-cooling cycles. *International Journal of Biological Macromolecules* 142, 191-200.
- Ratnayake, W.S., & Jackson, D.S. (2006). Gelatinization and solubility of corn starch during heating in excess water: new insights. *Journal of Agricultural and Food Chemistry* 54(10), 3712-3716.
- Raungrusmee, S., & Anal, A.K. (2019). Effects of lintnerization, autoclaving, and freeze-thaw treatments on resistant starch formation and functional properties of Pathumthani 80 rice starch. *Foods* 8(11), 558.
- Raungrusmee, S., Koirala, S., & Anal, A.K. (2022). Effect of physicochemical modification on granule morphology, pasting behavior, and functional properties of riceberry rice (*Oryza Sativa* L.) starch. *Food Chemistry Advances* 1, 100116.
- Reddy, C.K., Haripriya, S., Mohamed, A.N., & Suriya, M. (2014). Preparation and characterization of resistant starch III from elephant foot yam (*Amorphophallus paeonifolius*) starch. *Food Chemistry* 155, 38-44.
- Reeves, P.G. (1997). Component of the AIN-93 diets as improvements in the AIN-76A diet. *The Journal of nutrition* 127(5), 838-841.
- Reeves, P.G., Nielsen, F.H., & Fahey Jr, G.C. (1993). AIN-93 purified diets for laboratory rodents: final report of the American Institute of Nutrition ad hoc writing committee on the reformulation of the AIN-76A rodent diet. *The Journal of Nutrition* 123(11), 1939-1951.
- Remya, R., Jyothi, A.N., & Sreekumar, J. (2017). Comparative study of RS4 type resistant starches derived from cassava and potato starches via octenyl succinylation. *Starch* 69(7-8), 1600264.
- Rengadu, D., Gerrano, A.S., & Mellem, J.J. (2020). Physicochemical and structural characterization of resistant starch isolated from *Vigna unguiculata*. *International Journal of Biological Macromolecules* 147: 268-275.
- Rigamonti, A., Brenndand, K., Lau, F., & Cowan, C.A. (2011). Rapid cellular turnover in adipose tissue. *Plos One* 6(3), 17637.
- Rodrigues, S.C.S.R., da Silva, A.S., de Carvalho, L.H., Alves, T.S., & Barbosa, R. (2020). Morphological, structural, thermal properties of a native starch obtained from babassu mesocarp for food packaging application. *Journal of Material Research and Technology* 9(6), 15670-15678.
- Rodriguez-Garcia, ME., Hernandez-Landaverde, M.A., Delgado, J.M., Ramirez-Gutierrez, C.F., Ramirez-Cardona. M., Millan-Malo, B.M., et al. (2021).

- Crystalline structures of the main components of starch. *Current Opinion in Food Science* 37, 107-101.
- Rosado, C.P., Rosa, V.H.C., Martins, B.C., Soares, A.C., Santos, I.B., Monteiro, E.B., et al. (2020). Resistant starch from green banana (*Musa sp.*) attenuates non-alcoholic fat liver accumulation and increases short-chain fatty acids production in high-fat diet-induced obesity in mice. *International Journal of Biological Macromolecules* 145, 1066-1072.
- Rosida., Harijono., Estiasih, T., & Sriwahyuni, E. (2016). Physicochemical Properties and Starch Digestibility of Autoclaved-Cooled Water Yam (*Dioscorea alata* L.) Flour. *International Journal of Food Properties* 19(8), 1659-1670.
- Sajilata, M.G., Singhal, R.S., & Kulkarni, P.R. (2006). Resistant starch - A review. *Comprehensive Reviews in Food Science and Food Safety* 5(1), 1-17.
- Samantha, J.H., & Harris, R.B.S. (2011). The relation between dietary fructose, dietary fat and leptin responsiveness in rats. *Physiology & Behavior* 104, 914-922
- Sangkanu, S., Khanansuk, J., Phoopha, S., Udomuksorn, W., Phupan, T., Puntarat, J., et al. (2025). Utility assessment of isolated starch and extract from Thai yam (*Dioscorea hispida* Dennst.) for cosmetic via *in vitro* and *in vivo* studies. *Life* 15, 151.
- Sangwongchai, W., Sa-ingthong, N., Phothiset, S., Saenubon, C., & Thitisaksakul, M. (2024). Resistant starch formation and changes in physicochemical properties of waxy and non-waxy rice starches by autoclaving-cooling treatment. *International Journal of Food Properties* 27(1), 532-548.
- Santoso, B., Sarungallo, Z.L., & Puspitas, A.M. (2021). Physicochemical and functional properties of spineless, short-spines, and long-spines sago starch. *Biodiversitas* 22(1), 137-143.
- Sar, S., Tizzotti, M.J., Hasjim, J., & Gilbert, R.G. Effect of rice variety and growth location in Cambodia on grain composition and starch structure. *Rice Science* 21(1), 47-58.
- Schirmer, M., Jeckle, M., & Becker, T. (2015). Starch gelatinization and its complexity for analysis. *Starch* 67, 30-41.
- Segula, D. (2014). Complications of obesity in adults: a short review of the literature. *Malawi Medical Journal* 26(1), 20-24.
- Setiarto, R.H.B., Kusumaningrum, H.D., Jenie, B.S.L., Khusniati, T., Widhyastuti, N., & Ramadhani, I. (2020). Microstructure and physicochemical characteristics of modified taro starch after annealing, autoclaving-cooling and heat moisture treatment. *Food Research* 4(4), 1226-1233.
- Setiawan, E., & Setiani. (2016). Identifikasi potensi lokasi tanaman tacca (*Tacca leontopetaloides* (L.) O Kuntze) sebagai pangan lokal alternatif sumber karbohidrat untuk mendukung diversifikasi pangan Kabupaten Bangkalan. *Prosiding Seminar Nasional Pembangunan Pertanian*, 490-496.
- Shao, Y., Mao, L., Guan, W., Wei, X., Yang, Y., Xu, F., et al. (2020). Physicochemical and structural properties of low-amylose Chinese yam (*Dioscorea opposita* Thunb.) starches. *International Journal of Biological Macromolecules* 164, 427-433.

- Shashaj, B., Luciano, R., Contoli, B., Morino, G.S., Spreghini, M.R., Rustico, C., et al. (2015). Reference ranges of HOMA-IR in normal-weight and obese young Caucasians. *Acta Diabetologica* 53, 251-260.
- Shen, R-L., Zhang, W-L., Dong, J-L., Ren, G-X., & Chen, M. (2015). Sorghum resistant starch reduces adiposity in high-fat diet-induced overweight and obese rats via mechanisms involving adipokines and intestinal flora. *Food and Agricultural Immunology* 26(1), 120-130.
- Shi, L., Li, Y., Lin, L., Bian, X., & Wei, C. (2021). Effects of variety and growing location on physicochemical properties of starch from sweet potato root tuber. *Molecules* 26(23), 7137.
- Shi, S., Wang, E., Li, C., Cai, M., Cheng, B., Cao, C., et al. (2022). Use of protein content, amylose content, and RVA parameters to evaluate the taste quality of rice. *Frontiers in Nutrition* 8, 758547.
- Si, X., Strappe, P., Blanchard, C., & Zhou, Z. (2017). Enhanced anti-obesity effects of complex of resistant starch and chitosan in high fat diet fed rats. *Carbohydrate Polymers* 157, 834-841.
- Si, X., Zhou, Z., Strappe, P., & Blanchard, C. (2016). A comparison of RS4-type resistant starch to RS2-type resistant starch in suppressing oxidative stress in high-fat-diet-induced obese rats. *Food & Function* 25(1), 232-240.
- Šimková, D., Lachman, J., Hamouz, K., & Vokal, B. (2013). Effect of cultivar, location and year on total starch, amylose, phosphorus content and starch grain size of high starch potato cultivars for food and industrial processing. *Food Chemistry* 14(4), 3872-3880.
- Simonds, S.E., Pryor, J.T., & Cowley, M.A. (2018). Repeated weight cycling in obese mice causes increased appetite and glucose intolerance. *Physiology & Behavior* 194, 184-190.
- Singla, D., Singh, A., Dhull, S.B., Kumar, P., Malik, T., & Kumar, P. (2020). Taro starch: Isolation, morphology, modification and novel applications concern - A review. *International Journal of Biological Macromolecules* 163, 1283-1290.
- Sinusi, R., & Hargono, A. (2021). Diabetes, hypertension, obesity, and smoking as risk factors for chronic kidney disease in productive age. *Jurnal Berkala Epidemiologi* 9(1), 88-95.
- Skoracka, K., Hryorowicz, S., Schulz, P., Zawada, A., Ratajczak-Palowska, A.E., Rychter, A.M., et al. (2025). The role of leptin and ghrelin in the regulation of appetite in obesity. *Peptides* 186: 171367.
- Slade, L., & Levine, H. (2018). The “Food Polymer Science” approach to the practice of industrial R&D, leading to patent estates based on fundamental starch science and technology. *Critical Reviews in Food Science and Nutrition* 58(6): 972-992.
- Su, Z., Zeng, K., Feng, B., Tang, L., Sun, C., Wang, X., et al. (2021). Kun-Dan decoction ameliorates insulin resistance by activating AMPK/mTOR-mediated autophagy in high-fat diet-fed rats. *Frontiers Pharmacology* 12, 670151.
- Suastegui-Baylón, L., Salazar, R., Maldonado-Astudillo, Y.I., Ramírez-Sucre, M.O., Arámbula-Villa, G., Flores-Casamayor, V., et al. (2021). Physical,

- chemical and rheological characterization of tuber and starch from *Ceiba aesculifolia* subsp. parvifoli. *Molecules* 26(7), 2097.
- Subroto, E., Sholihat, F., Wulandari, E., Lani, M.Z., & Indiarso, R. (2024). Modification of gadung (*Dioscorea hispida* Dennst) starch by ultrasonication and freeze moisture treatment. *Carbohydrate Polymer Technologies and Applications* 8: 100552.
- Sudheesh, C., Sunooj, K.V., George, J., Kumar, S., & Sajeevkumar, V.A. (2019). Physico-chemical, morphological, pasting and thermal properties of stem flour and starch isolated from kithul palm (*Caryota urens*) grown in valley of Western Ghats of India. *Journal of Food Measurement and Characterization* 13, 1020-1030.
- Sukhija, S., Singh, S., & Riar, C.S. (2016). Physicochemical, crystalline, morphological, pasting and thermal properties of modified lotus rhizome (*Nelumbo nucifera*) starch. *Food Hydrocolloids* 60, 50-58.
- Suma, P.F., & Urooj, A. (2015). Isolation and characterization of starch from Pearl Millet (*Pennisetum typhoidium*) flours. *International Journal of Food Properties* 18(12), 2675-2687.
- Sun, H., Fan, J., Tian, Z., Ma, L., Meng, Y., Yang, Z., et al. (2022). Effects of treatment methods on the formation of resistant starch in purple sweet potato. *Food Chemistry* 367, 1305.
- Sutjahjo, A. (2015). High molecular weight adiponectin and vascular thickness in diabetes type 2 related to fixed dose combination of glimepiride and metformin. *Indonesian Journal of Clinical Pathology and Medical Laboratory* 21(2), 120-124.
- Syahbanu, F., Napitupulu, F.I., Septiana, S., & Aliyah, N.F. (2023). Struktur pati beras (*Oryza sativa* L.) dan mekanisme perubahannya pada fenomena gelatinisasi dan retrogradasi. *Agrointek* 17(4), 755-767.
- Syarif, F., Lestari, P., & Wawo, A.H. (2014). Variasi karakteristik pertumbuhan *Tacca leontopetaloides* (L) Kuntze (*Taccaceae*) di Pulau Jawa dan Pulau-Pulau kecil disekitarnya. *Berita Biologi* 13(2), 161-171.
- Tang, Q., Li, X., Song, P., & Xu, L. (2015). Optimal cut-off values for the homeostasis model assessment of insulin resistance (HOMA-IR) and pre-diabetes screening: Developments in research and prospects for the future. *Drug Discoveries & Therapeutics* 9(6), 380-385.
- Tantot, F., Parkes, S.L., Marchand, A.R., Boitard, C., Naneix, F., Laye, S., et al. (2017). The effect of high-fat diet consumption on appetitive instrumental behavior in rats. *Appetite* 108, 203-211.
- Tappiban, P., Sraphet, S., Srisawad, N., Wu, P., Han, H., Smith, D.R., et al. (2020). Effects of cassava variety and growth location on starch fine structure and physicochemical properties. *Food Hydrocolloids* 108, 106074.
- Tappy, L., & Le, K-A. (2010). Metabolic effects of fructose and the worldwide increase in obesity. *Physiological Review* 90(1), 23-46.
- Tejavathi, D.H., Sujatha, B.S., & Karigar, C.S. (2020). Physicochemical properties of starch obtained from *Curcuma karnatakensis*-A new botanical source for high amylose content. *Heliyon* 6(1), e03169.

- Thompson, M.S., Dahari, S.I., Shamsuddin, M.S., Rashed, A., & Sarbini, S.R. (2021). Effects of sago starch on body weight, food intake, caecum short chain fatty acids, adipose tissue, and hepatic lipid content of fat-induced *Sprague Dawley* rats. *International Food Research Journal* 28(5), 1057-1066.
- Traversy, G., & Chaput, J-P. (2015). Alcohol consumption and obesity: an update. *Current Obesity Reports* 4, 122-130.
- Trigueros, L., Peña, S., Ugidos, A.V., Sayas-Barberá, E., Pérez-Álvarez, J.A., & Sendra, E. (2013). Food ingredients as anti-obesity agents: A Review. *Critical Reviews in Food Science and Nutrition* 53(9), 929–942.
- Triwitono, P., Marsono, Y., Murdiati, A., & Marseno, D.W. (2016). Physiological effects of mung bean starch RS3 on the obesity index and adipose cell profile of Sprague-Dawley rats. *Pakistan Journal of Nutrition* 15(10), 913-920.
- Triwitono, P., Marsono, Y., Murdiati, A., & Marseno, D.W. (2017). Pengaruh metode kombinasi autoklaf 2 siklus dan hidrolisis asam sitrat terhadap sifat kimia dan Ffsika RS3 pati kacang hijau (*Vigna radiata* L.). *agriTECH* 37(3), 312-318.
- Udomkasemsab, A., & Prangthip, P. (2019). High fat diet for induced dyslipidemia and cardiac pathological alterations in Wistar rats compared to Sprague Dawley rats. *Clinical e Investigacion en Arteriosclerosis* 31(2), 56-62.
- Velásquez-Barreto, F.F., Miñano, AH.A., Alvarez-Ramirez, J., & Bello-Pérez, L.A. (2021). Structural, functional, and chemical properties of small starch granules: Andean quinoa and kiwicha. *Food Hydrocolloids* 120, 106883.
- Vincent, R.P., Ashrafian, H., & Roux, C.W.L. (2008). Mechanisms of disease: the role of gastrointestinal hormones in appetite and obesity. *Nature Reviews Gastroenterology & Hepatology* 5, 268-277.
- Vladu, I.M., Fortofoui, M., Clencu, D., Fortofoiu, M-C., Padureanu, R., Radu, L., et al. (2022). Insulin resistance quantified by the value of HOMA-IR and cardiovascular risk in patients with type 2 diabetic. *Experimental and Therapeutic Medicine* 23, 73.
- Vu, Q.T.H., Binh, H.T., Phung, L.T.K., Oanh, T.N.K., Thao, L.T.T., Phuong, N.L.B., et al. (2018). Resistant starch of *Tacca leontopetaloides* (L.) Kuntze by various treatment methods. *The 12th SEATUC Symposium*: 1-6.
- Vu, Q.T.H., Le, P.T.K., Vo, H.P.H., Nguyen, T.T., & Nguyen, T.K.M. (2017). Characteristics of *Tacca leontopetaloides* L. Kutze collected from An Giang in vietnam. *AIP Conference Proceedings* 1878, 020022.
- Wadden, T.A., Tronieri, J.S., & Butryn, M.L. (2020). Lifestyle modification approaches for the treatment of obesity in adults. *American Psychologist* 75(2), 235-251.
- Wahjuningsih, S.B., Haslina, H., Putranto, A.T., & Azkia, M.N. (2020). Effect of sago analogue rice and red bean diet to the improvement of  $\beta$ -cell pancreas in streptozotocin-nicotinamide (STZ-NA) induced diabetic rats. *Current Research in Nutrition and Food Science* 8(2), 667-673.
- Wahyudi, M., Yelli, F., Surtono, A., Supriatin., & Afriliyanti, R. (2024). Effect of soil nutrient and clone on cassava (*Manihot esculenta* Crantz) starch content

- in Central Lampung measured by the balance method. *Jurnal Agrotek tropika* 12(4), 935-948.
- Wahyuni, T.S., & Noerwijati, K. (2021). Cassava genotypes selection for high yield and high starch content in advanced field trials. *International Conference on Green Agro-Industry and Bioeconomy* 733, 012127.
- Wan, J., Wu, Y., Pham, Q., Yu, L., Chen, M-H., Boue, S.M., et al. (2020). Effects of rice with different amounts of resistant starch on mice fed a high-fat diet: attenuation of adipose weight gain. *Journal of Agricultural and Food Chemistry* 68(46), 13046-13055.
- Wan, L., Lu, J., Huang, J., Huo, Y., Jiang, S., & Guo, C. (2020). Association between peripheral adiponectin and lipids levels and the therapeutic response to donepezil treatment in Han Chinese patients with Alzheimer's disease. *Frontiers in Aging Neuroscience* 12, 532386.
- Wang, B., Kong, Q., Li, X., Zhao, J., Zhang, H., Chen, W., et al. (2020b). A high-fat diet increases gut microbiota biodiversity and energy expenditure due to nutrient difference. *Nutrients* 12(10), 3197.
- Wang, H., Yang, Q., Gao, L., Gong, X., Qu, Y., & Feng, B. (2020a). Functional and physicochemical properties of flours and starches from different tuber crops. *International Journal of Biological Macromolecules* 148, 324-332.
- Wang, L., Liu, L., Zhao, J., Li, C., Wu, H., Zhao, H., et al. (2023a). Granule-bound starch synthase in plants: Towards an understanding of their evolution, regulatory mechanisms, applications, and perspectives. *Plant Science* 336, 111843.
- Wang, Q-L., Yang, Q., Kong, X-P., & Chen, H-Q. (2024). The addition of resistant starch and protein to the batter reduces oil uptake and improves the quality of the fried batter-coated nuts. *Food Chemistry* 438: 137992.
- Wang, S., Li, C., Copeland, L., Niu, Q.N., & Wang, S. (2015). Starch retrogradation: A comprehensive review. *Comprehensive Reviews in Food Science and Food Safety* 14(5), 568-585.
- Wang, X., Cheng, M., Zhao, M., Ge, A., Guo, F., Zhang, M., et al. (2013). Differential effects of high-fat-diet rich in lard oil or soybean oil on osteopontin expression and inflammation of adipose tissue in diet-induced obese rats. *European Journal of Nutrition* 52, 1181-1189.
- Wang, X., Reddy, C.K., & Xu, B. (2018a). A systematic comparative study on morphological, crystallinity, pasting, thermal and functional characteristics of starches resources utilized in China. *Food Chemistry* 259, 81-88.
- Wang, J., Guo, K., Fan, X., Wei, C. (2018b). Physicochemical properties of C-Type starch from root tuber of *Apios fortune* in comparison with maize, potato, and pea starches. *Molecules* 23(9), 2132
- Wang, Y., Chen, J., Song, Y-H., Zhao, R., Xia, L., Chen, Y., et al. (2019). Effects of the resistant starch on glucose, insulin, insulin resistance, and lipid parameters in overweight or obese adults: a systematic review and meta-analysis. *Nutrition and Diabetes* 9(19), 1-19.
- Wang, Z., Wang, S., Xu, Q., Kong, Q., Li, F., Lu, L., et al. (2023b). Synthesis and functions of resistant starch. *Advances in Nutrition* 14, 1131-1144.

- Waramboi, J.G., Dennien, S., Gidley, M.J., & Sopade, P.A. (2011). Characterization of sweet potato from Papua New Guinea and Australia: Physicochemical, pasting and gelatinization properties. *Food Chemistry* 126(4), 1759-1770.
- Wardah, & Ariani, D. (2020). Ethnobotany study of Jalawure (*Tacca leontopetaloides*) as a source of nutrition quality improvement on the South Coastal people in West Java. *IOP Conference Series: Earth and Environmental Science* 458, 012047.
- Westermann, S., Rief, W., Euteneuer, F., & Kohlmann, S. (2015). Social exclusion and shame in obesity. *Eating Behaviors* 17, 74-76.
- WHO (2010). Global status report on noncommunicable diseases 2010. [https://apps.who.int/iris/bitstream/handle/10665/44579/9789240686458\\_eng.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/44579/9789240686458_eng.pdf?sequence=1&isAllowed=y). [Akses 20 Desember 2021].
- WHO (2021). Obesity and overweight. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>. [Akses 20 Desember 2021].
- Wijanarka, A., Tifauzah, N., & Wijaningsih, W. (2016). Antidiabetic potential of modified gayam (*Inocarpus fagifer* Forst.) starch in diabetic rats STZ-NA induced. *Pakistan Journal of Medical & Health Sciences* 14(2), 1474-1478.
- Wilcox, G. (2005). Insulin and insulin resistance. *Clinical Biochemist Reviews* 26(2), 19-39.
- Winara, A., & Murniati. (2018). Pola sebaran, kelimpahan populasi dan karakteristik habitat jalawure (*Tacca leontopetaloides*) di Kabupaten Garut. *Jurnal Penelitian Hutan dan Konservasi Alam* 16(2), 79-89.
- Winara, A., Suhatono., Rohandi, A., Fauziyah, E., Herdayana, Rd.D., Saepudin, U., et al. (2019). *Agroforestri Jalawure (Tacca leontopetaloides): Pangan alternatif dari hutan untuk wilayah pesisir*. UNS Press, Surakarta.
- Wolfensohn, S., & Lloyd, M., (2013). *Handbook of Laboratory Animal Management and Welfare, 4<sup>th</sup> ed.* hal: 234. Wiley-Blackwell Science Ltd.
- Wu, C., & Zhou, X. (2018). The overview of functional starch. *Dalam: Jin, Z. (eds) Functional starch and applications in food*, hal: 1-26. Springer, Singapore.
- Wu, C., Sun, R., Zhang, Q., & Zhang, G. (2020). Synthesis and characterization of citric acid esterified canna starch (RS4) by semi-dry method using vacuum-microwave-infrared assistance. *Carbohydrate Polymers* 250, 116985.
- Wu, T., Guo, Y., Liu, R., Wang, K., & Zhang, M. (2016). Black tea polyphenols and polysaccharides improve body composition, increase fecal fatty acid, and regulate fat metabolism in high-fat diet-induced obese rats. *Food & Function* 7(5), 2469-2478.
- Xie, Z., Wang, S., Wang, Z., Fu, X., Huang, Q., Yuan, Y., et al. (2021). *In vitro* fecal fermentation of propionylated high-amylose maize starch and its impact on gut microbiota. *Carbohydrate Polymers* 223, 115069.
- Xu, Q., Zheng, F., Yang, P., Tu, P., Xing, Y., Zhang, P., et al. (2023). Effect of autoclave-cooling cycles combined pullulanase on the physicochemical and structural properties of resistant starch from black Tartary buckwheat. *Journal of Food Science* 88(1), 315-327.
- Yang, F., Xiao, H.X., Lin, Q.L., Zhang, Q., Wang, S.Y., Luo, F.J., et al. (2018). Ultrasound-damp heat method combined with acid hydrolysis in preparation

- of rice resistant starch and its physico-chemical properties. *Journal of the Chinese Cereals and Oils Association* 33(7), 43-50.
- Yang, Q., Liu, L., Li, X., Li, J., Zhang, W., Shi, M., et al. (2021). Physicochemical characteristics of resistant starch prepared from Job's tears starch using autoclaving-cooling treatment. *CyTA-Journal of Food* 19(1), 316-325.
- Yao, T., Sui, Z., & Janaswamy, S. (2018). Annealing. *Dalam*. Sui, Z., & Kong, X. (eds) *Physical Modifications of Starch*, hal 37-49. Springer, Singapore
- Yonata, D., Triwitono, P., Lestari, L.A., & Pranoto, Y. (2023). Physicochemical, structure and functional characteristics of *Tacca leontopetaloides* starches grown in Indonesia. *Biodiversitas Journal of Biological Diversity* 24(11), 6396-6406.
- Yonata, D., Pranata, B., & Nurhidajah. (2024). Potential of neglected and underutilized tacca tuber (*Tacca leontopetaloides*) for sustainable food system in Indonesia, *Journal of Global Innovation in Agricultural Science* 12(3), 770-778
- Yousefi, A.R., Razavi, S.M.A., & Norouzy, A. (2015). In vitro gastrointestinal digestibility of native, hydroxypropylated and cross-linked wheat starches. *Food & Function* 6(9), 3126-3134.
- Yousif, E.I., Gadallah, M.G.E., & Sorour, A.M. (2012). Physico-chemical and rheological properties of modified corn starches and its effect on noodle quality. *Annals of Agricultural Sciences* 57(1), 19-27.
- Zabar, S., Shimoni, E., & Bianco-Peled, H.B. (2008). Development of nanostructure in resistant starch type III during thermal treatments and cycling. *Macromolecular Bioscience* 8(2), 163-170.
- Zabot, G.L., Silva, E.K., Emerick, L.B., Felisberto, M.H.F., Clerici, M.T.P.S., & Meireles, M.A.A. (2019). Physicochemical, morphological, thermal and pasting properties of a novel native starch obtained from annatto seeds. *Food Hydrocolloids* 89, 321-329.
- Zailani, M.A., Kamilah, H., Husaini, A., & Sarbini, S.R. (2021). Physicochemical properties of microwave heated sago (*Metroxylon sago*) starch. *CyTA-Journal of Food* 19(1), 596-605.
- Zailani, M.A., Kamilah, H., Husaini, A., Seruji, A.Z.R.A., & Sarbini, S.R. (2022). Functional and digestibility properties of sago (*Metroxylon sago*) starch modified by microwave heat treatment. *Food Hydrocolloids* 122, 107042.
- Zaku, S.G., Aguzue, O.C., Thomas, S.A., & Barminas, J.T. (2009). Studies on the functional properties and the nutritive values of amura plant starch (*Tacca involucrata*) a wild tropical plant. *African Journal of Food Science* 3(10), 320-322.
- Zeng, J., Li, G., Gao, H., & Ru, Z. (2011). Comparison of A and B starch granules from three wheat varieties. *Molecules* 16(12), 10570-10591.
- Zhang, C., Ma, S., Wu, J., Luo, L., Qiao, S., Li, R., et al. (2020). A specific gut microbiota and metabolomic profiles shifts related to antidiabetic action: The similar and complementary antidiabetic properties of type 3 resistant starch from *Canna edulis* and metformin. *Pharmacological Research* 159, 104985.
- Zhang, C., Qiu, M., Wang, T., Luo, L., Xu, W., Wu, J., et al. (2021). Preparation, structure characterization, and specific gut microbiota properties related to

- anti-hyperlipidemic action of type 3 resistant starch from *Canna edulis*. *Food Chemistry* 351, 129340.
- Zhang, C., Zhou, L., Zhu, Z., Lu, H., Zhou, X., Qian, Y., et al. (2016). Characterization of grain quality and starch fine structure of two Japonica rice (*Oryza sativa*) cultivars with good sensory properties at different temperatures during the filling stage. *Journal of Agricultural and Food Chemistry* 64, 4048-4057.
- Zhang, L., Li, H.T., Shen, L., Fang, Q.C., Qian, L.L., & Jia, W.P. (2015). Effect of dietary resistant starch on prevention and treatment of obesity-related diseases and its possible mechanisms. *Biomedical and Environmental Science* 28(4), 291-297.
- Zhang, L., Zhao, L., Bian, X., Guo, K., Zhou, L., & Wei, C. (2018). Characterization and comparative study of starches from seven purple sweet potatoes. *Food Hydrocolloids* 80, 168-176.
- Zhang, M., Jia, H., Wang, B., Ma, C., He, F., & Liu, W. (2023a). A prospective review on the research progress of citric acid modified starch. *Foods* 12, 458.
- Zhang, T., Sun, W., Wang, L., Zhang, H., Wang, Y., Pan, B., et al. (2023b). *Rosa laevigata* Michx. polysaccharide ameliorates diabetic nephropathy in mice through inhibiting ferroptosis and PI3K/AKT pathway-mediated apoptosis and modulating tryptophan metabolism. *Journal of Diabetes Research* 2023(1), 9164883.
- Zhang, Y., Liu, W., Liu, C., Luo, S., Li, T., Liu, Y., et al. (2014). Retrogradation behaviour of high-amylose rice starch prepared by improved extrusion cooking technology. *Food Chemistry* 158: 255-261.
- Zhao, X-H., & Lin, Y. (2009a). Resistant starch prepared from high-amylose maize starch with citric acid hydrolysis and its simulated fermentation in vitro. *European Food Research and Technology* 228, 1015-1021.
- Zhao, X-H., & Lin, Y. (2009b). The impact of coupled acid or pullulanase debranching on the formation of resistant starch from maize starch with autoclaving-cooling cycles. *European Food Research and Technology* 230, 179-184.
- Zheng, B., Wang, T., Wang, H., Chen, L., & Zhou, Z. (2020). Studies on nutritional intervention of rice starch-oleic acid complex (resistant starch type v) in rats fed by high-fat diet. *Carbohydrate Polymers* 246, 116637.
- Zhou, D., Ma, Z., Xu, J., Li, X., & Hu, X. (2019). Resistant starch isolated from enzymatic, physical, and acid treated pea starch: Preparation, structural characteristics, and in vitro bile acid capacity. *LWT* 116, 108541.
- Zhu, F. (2015). Isolation, composition, structure, properties, modifications, and uses of yam starch. *Comprehensive Reviews in Food Sciences and Food safety* 14, 357-386.
- Zhu, F., & Wang, S. (2014). Physicochemical properties, molecular structure, and uses of sweet potato starch. *Trends in Food Science & Technology* 36(2), 68-78.
- Zhu, T., Jackson, D.S., Wehling, R.L., & Geera, B. (2008). Comparison of amylose determination methods and the development of a dual wavelength iodine binding technique. *Cereal Chemistry* 85(1), 51-58.

Zobel, H.F. (1988). Starch crystal transformations and their industrial importance.  
*Starch* 40(1), 1-7.