

REFERENCES

- Adebayo, S. A., E. Brown-Myrie and O. A. Itiola. 2008. Comparative disintegrant activities of breadfruit starch and official corn starch. *Powder Technology*, 181(2): 98-103.
- Anutrakulchai, P. 2010. Potential of carboxymethyl modified mungbean starch as a carrier in a controlled release drug delivery system. M.S. Thesis, Chiang Mai University
- Bi, Y., H. Sunada, Y. Yonezawa, K. Danjo, A. Otsuka and K. Iida. 1996. Preparation and evaluation of a compressed tablet rapidly disintegrating in the oral cavity. *Chemical pharmaceutical bulletin*, 44(11): 2121-2127.
- Bos, C. E., G. K. Bolhuis, H. van Doorne and C. F. Lerk. 1987. Native starch in tablet formulations: Properties on compaction. *Pharmacy World & Science*, 9(5): 274-282.
- Carmona-Garcia, R., M. M. Sanchez-Rivera, G. Méndez-Montealvo, B. Garza-Montoya and L. A. Bello-Pérez. 2009. Effect of the cross-linked reagent type on some morphological, physicochemical and functional characteristics of banana starch (*Musa paradisiaca*). *Carbohydrate Polymers*, 76(1): 117-122.
- Carr, R. 1965. Evaluating flow properties of solids. *Chemical Engineering*, 72(2): 163-168.

- Chang, R.-K., M. Shinwari, M. Leonzio, L.-S. Wu, J. Pang and M. A. Hussain. 1998. Evaluation of the disintegrant properties for an experimental, crosslinked polyalkylammonium polymer. *International Journal of Pharmaceutics*, 173(1-2): 87-92.
- Chatakanonda, P., S. Varavinit and P. Chinachoti. 2000. Effect of Crosslinking on Thermal and Microscopic Transitions of Rice Starch. *Lebensmittel-Wissenschaft und-Technologie*, 33(4): 276-284.
- Chen, Y.-X. and G.-Y. Wang. 2006. Adsorption properties of oxidized carboxymethyl starch and cross-linked carboxymethyl starch for calcium ion. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 289(1): 75-83.
- De Miguel, I., V. Rieumajou and D. Betbeder. 1999. New methods to determine the extent of reaction of epichlorohydrin with maltodextrins. *Carbohydrate Research*, 319(1-4): 17-23.
- Dong-Fang, Z., J. Ben-zhi, Z. Shu-fen and Y. Jin-zong. 2005. Progress in the synthesis and application of green chemicals, carboxymethyl starch sodium. *The Proceeding of the 3rd International Conference on Functional Molecules, China*. pp. 25-30.
- Filbert, W. F. and N. J. Woodbury. Carboxymethyl ethers, U.S. Pat 2599620 Aug. 31, 1950.
- Gadalla, M. A. F., M. H. D. El-Hameed and A. A. Ismail. 1989. A comparative evaluation of some starches as disintegrants for double compressed tablets. *Drug Dev. and Ind. Pharm.*, 15(3): 427-446.

- Gunaratne, A. and H. Corke. 2007. Functional properties of hydroxypropylated cross linked, and hydroxypropylated cross linked tuber and root starches. *Cereal Chemistry*, 84(30-37).
- Guyot-Hermann, A. M. and J. Ringard. 1981. Disintegration mechanisms of tablets containing starches. Hypothesis about the particle-particle repulsive force. *Drug Development and Industrial Pharmacy*, 7(2): 155-177.
- Hamerstrand, G. E., B. T. Hofreiter and C. L. Mehlretter. 1960. Determination of the extend of reaction between epichlorohydrin and starch. *Cereal Chemistry*, 37(519-524).
- Hirani, J. J., D. A. Rathod and K. R. Vadalia. 2009. Orally disintegrating tablets: A Review. *Tropical Journal of Pharmaceutical Research*, 8(2): 161-172.
- Jaiyeoba, K. Y. and W. O. Opakunle. 1978. The glidant properties of cassava and yam starches. *Manufactureing Chemist and Aerosol News*, 49(6): 77-78.
- Juliano, B. O. 1971. Asimplified assay for milled-rice amylose. *Cereal Science Today*, 16(334-360).
- Kamel, S. and K. Jahangir. 2007. Optimization of Carboxymethylation of Starch in Organic Solvents. *International Journal of Polymeric Materials*, 56(5): 511-519.
- Kittipongpatana, O. S., J. Sirithunyalug and R. Laenger. 2006. Preparation and physicochemical properties of sodium carboxymethyl mungbean starches. *Carbohydrate Polymers*, 63(1): 105-112.

- Kittipongpatana, O. S., W. Chaitep and N. Kittipongpatana. 2010. Physicochemical and Pharmaceutical Properties of Cross-Linked Carboxymethyl Rice Starch Prepared by a Simultaneous Dual Reaction. *Cereal Chemistry*, 87(3): 214-220.
- Kittipongpatana, O. S., W. Chaitep, N. Kittipongpatana, R. Laenger and K. Sriroth. 2007. Physicochemical and Pharmaceutical Properties of Carboxymethyl Rice Starches Modified from Native Starches with Different Amylose Content. *Cereal Chemistry*, 84(4): 331-336.
- Kondo, T. 1997. The assignment of IR absorption bands due to free hydroxyl groups in cellulose. *Cellulose*, 4(4): 281-292.
- Kooijman, L. M., K. J. Ganzeveld, R. M. Manurung and H. J. Heeres. 2003. Experimental Studies on the Carboxymethylation of Arrowroot Starch in Isopropanol-Water Media. *Starch - Stärke*, 55(11): 495-503.
- Lawal, O. S., M. D. Lechner and W. M. Kulicke. 2008a. Single and multi-step carboxymethylation of water yam (*Dioscorea alata*) starch: Synthesis and characterization. *International Journal of Biological Macromolecules*, 42(5): 429-435.
- Lawal, O. S., M. D. Lechner and W. M. Kulicke. 2008b. The synthesis conditions, characterizations and thermal degradation studies of an etherified starch from an unconventional source. *Polymer Degradation and Stability*, 93(8): 1520-1528.
- Majzoobi, M., M. Radi, A. Farahnaky, J. Jamalain and T. Tongdang. 2009. Physicochemical properties of phosphoryl chloride cross-linked wheat starch. *Iranianpolymer Journal*, 18(6): 491-499.

- Mirmoghtadaie, L., M. Kadivar and M. Shahedi. 2009. Effects of cross-linking and acetylation on oat starch properties. *Food Chemistry*, 116(3): 709-713.
- Mukesh, C. G. 2009. Formulation of tablets [Online]. Available: <http://www.pharmainfo.net/tablet-ruling-dosage-form-years/formulation-tablets> [2010, March 8].
- Nattapulwat, N., N. Purkkao and O. Suwithayapanth. 2008. Evaluation of native and carboxymethyl yam starch (*Dioscorea esculenta*). *Silpakorn University Science and Technology Journal*, 2(2): 18-25.
- Niu, C., W. Wu, Z. Wang, S. Li and J. Wang. 2007. Adsorption of heavy metal ions from aqueous solution by crosslinked carboxymethyl konjac glucomannan. *Journal of Hazardous Materials*, 141(1): 209-214.
- Nogami, H., T. Nagai, E. Fukuoka and T. Sonobe. 1969. Disintegration of the aspirin tablets containing potato starch and microcrystalline cellulose in various concentrations. *Chemical & Pharmaceutical Bulletin*, 17(7): 1450-1455.
- Onofre, F., Y.-J. Wang and A. Mauromoustakos. 2009. Effects of structure and modification on sustained release properties of starches. *Carbohydrate Polymers*, 76(4): 541-547.
- Prescott, J. K. and R. A. Barnum. 2000. On powder flowability. *Pharmaceutical Technology*, 62-84.
- Rawas-Qalaji, M. M., F. E. R. Simons and K. J. Simons. 2006. Fast-disintegrating sublingual tablets: effect of epinephrine load on tablet characteristics. *AAPS PharmSciTech*, 7(2): 1-7.

- Riley, C. K., S. A. Adebayo, A. O. Wheatley and H. N. Asemota. 2008. Surface properties of yam (*Dioscorea* sp.) starch powders and potential for use as binders and disintegrants in drug formulations. *Powder Technology*, 185(3): 280-285.
- Rowe, R. C., P. J. Sheskey and S. C. Owen. 2006. *Handbook of pharmaceutical excipients in association*, ed. London: Pharmaceutical press.
- Sangseethong, K., S. Ketsilp and K. Sriroth. 2005. The Role of Reaction Parameters on the Preparation and Properties of Carboxymethyl Cassava Starch. *Starch - Stärke*, 57(2): 84-93.
- Silva, D. A., J. P. A. Feitosa, J. S. Maciel, H. C. B. Paula and R. C. M. de Paula. 2006. Characterization of crosslinked cashew gum derivatives. *Carbohydrate Polymers*, 66(1): 16-26.
- Singh, N., J. Singh, L. Kaur, N. Singh Sodhi and B. Singh Gill. 2003. Morphological, thermal and rheological properties of starches from different botanical sources. *Food Chemistry*, 81(2): 219-231.
- Singh, N., L. Kaur, K. S. Sandhu, J. Kaur and K. Nishinari. 2006. Relationships between physicochemical, morphological, thermal, rheological properties of rice starches. *Food Hydrocolloids*, 20(4): 532-542.
- Tekhunmag, T. 2007. Potential of modified starches prepared from various types of native starch through hydroxypropylation and carboxymethylation as film former. M.S. Thesis, Chiang Mai University.

- Tekhunmag, T., N. Kittipongpatana, S. Malisuwan, S. Watanagebudtra and O. S. Kittipongpatana. 2008. Preparation, physicochemical and film-forming properties of carboxymethyl/hydroxypropyl dual-modified Tapioca Starches. *Chiang Mai University Journal of Natural Sciences*, 7(2): 219.
- Tijssen, C. J., H. J. Kolk, E. J. Stamhuis and A. A. C. M. Beenackers. 2001. An experimental study on the carboxymethylation of granular potato starch in non-aqueous media. *Carbohydrate Polymers*, 45(3): 219-226.
- Van Hung, P. and N. Morita. 2005. Physicochemical properties of hydroxypropylated and cross-linked starches from A-type and B-type wheat starch granules. *Carbohydrate Polymers*, 59(2): 239-246.
- Wang, L.-F., S.-Y. Pan, H. Hu, W.-H. Miao and X.-Y. Xu. 2010. Synthesis and properties of carboxymethyl kudzu root starch. *Carbohydrate Polymers*, 80(1): 174-179.
- Wattanachant, S., K. Muhammad, D. Mat Hashim and R. A. Rahman. 2003. Effect of crosslinking reagents and hydroxypropylation levels on dual-modified sago starch properties. *Food Chemistry*, 80(463-471).
- Whistler, R. L., J. N. BeMiller and F. Paschall, eds. 1984a. *Starch: Chemistry and technology* (2nd edition). Orlando, Florida: Academic Press. Inc. p. 718.
- Whistler, R. L., J. N. BeMiller and F. Paschall, eds. 1984b. *Starch: Chemistry and technology* (2nd edition). Orlando, Florida: Academic Press. Inc. p. 718.
- Yanli, W., G. Wenyan and L. Xia. 2009. Carboxymethyl Chinese yam starch: synthesis, characterization, and influence of reaction parameters. *Carbohydrate Research*, 344(13): 1764-1769.

Yotwimonwat, S. 1999. Modification of cassava starch by heat-moisture treatment as a tablet disintegrant. M.S. Thesis, Chiang Mai University.

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