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Effect of processing methods on xylitol-starch base co-processed adjuvant for orally disintegrating tablet application (Article)

Bin, L.K.[a,b], Mohammed Helaluddin, A.B.[c], Islam Sarker, M.Z.[c], Mandal, U.K.[b], Gaurav, A.[a]

[a]Faculty of Pharmaceutical Sciences, UCSI University, UCSI Height, No 1, Jalan Menara Gading, Cheras, Kuala Lumpur, Malaysia
[b]CUCMS University, Persiaran Bestari, Cyberjaya, Selangor, Malaysia
[c]Faculty of Pharmacy, International Islamic University Malaysia, Bandar Indera Mahkota, Kuantan, Pahang, Malaysia

Abstract

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Orally disintegrating tablet (ODT) is a friendly dosage form that requires no access to water and serves as a solution to non-compliance. There are many co-processed adjuvants available in the market. However, there is no single product possesses all the ideal characteristics such as good compressibility, fast disintegration and good palatability for ODT application. The aim of this research was to produce a xylitol-starch base co-processed adjuvant which is suitable for ODT application. Two processing methods namely wet granulation and freeze drying were used to compare the characteristics of co-processed adjuvant comprising of xylitol, starch and crospovidone XL-10 mixed at various ratios. The co-processed excipients were compressed into ODT and physically characterized for powder flow, particle size, hardness, thickness, weight, friability, in-vitro disintegration time and in-situ disintegration time, lubricant sensitivity, dilution potential, Fourier transform infrared spectroscopy, scanning electronic microscopy and x-ray diffraction analysis. Formulation F6 was selected as the optimum formulation due to the fastest in-vitro (135.33±11.52 s) and in-situ disintegration time (88.67±13.56s) among all the formulations ($p<0.05$). Increase in starch component decreases disintegration time of ODT. The powder flow fell under the category of fair flow. Generally, it was observed that freeze drying method produced smaller particle size granules compared to wet granulation method. ODT produced from freeze drying method had shorter disintegration time compared to ODT from wet granulation batch. In conclusion, a novel co-processed excipient comprised of xylitol, starch and crospovidone XL-10, produced using freeze drying method with fast disintegration time, good compressibility and palatability was developed and characterized. The co-processed excipient is suitable for ODT application.

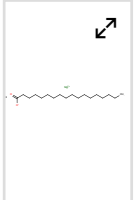
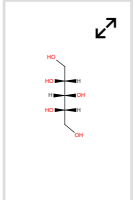
SciVal Topic Prominence

Topic: Tablets | Carboxymethylcellulose | Angle of Repose

Prominence percentile: 92.085

Chemistry database information

Substances



crospovidone

Author keywords

Co-processed adjuvant | Crospovidone | Freeze drying | Starch | Xylitol

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References (25)

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1 Akram, M., Naqvi, S.B.S., Gauhar, S.
Development of coprocessed micro granules for direct compression
(2011) *International Journal of Pharmacy and Pharmaceutical Sciences*, 3 (SUPPL. 2), pp. 64-69. Cited 8 times.
http://www.ijppsjournal.com/Vol3Suppl2/1037.pdf

2 Almaya, A., Aburub, A.
Effect of particle size on compaction of materials with different deformation mechanisms with and without lubricants
(2008) *AAPS PharmSciTech*, 9 (2), pp. 414-418. Cited 43 times.
doi: 10.1208/s12249-008-9059-3
View at Publisher

3 Ambore, S.M., Tekale, J., Gattani, S.G.
Investigation of novel multifunctional co-processed excipient for direct compression
(2014) *World Applied Sciences Journal*, 31 (5), pp. 801-810. Cited 6 times.
http://idosi.org/wasj/wasj31%285%2914/19.pdf
doi: 10.5829/idosi.wasj.2014.31.05.1626
View at Publisher

4 Badgujar, B.P., Mundada, A.S.
The technologies used for developing orally disintegrating tablets: A review (Open Access)
(2011) *Acta Pharmaceutica*, 61 (2), pp. 117-139. Cited 77 times.
doi: 10.2478/v10007-011-0020-8
View at Publisher

5 Desai, P.M., Liew, C.V., Heng, P.W.S.
Review of Disintegrants and the Disintegration Phenomena (Open Access)

(2016) *Journal of Pharmaceutical Sciences*, 105 (9), pp. 2545-2555. Cited 96 times.
www.interscience.wiley.com/jpages/0022-3549
doi: 10.1016/j.xphs.2015.12.019

View at Publisher

6 Dey, N.S., Panda, B.P., Rao, M.E.B.
Effect of co-processed direct compressible vehicles on fast dissolving tablets

(2010) *International Journal of PharmTech Research*, 2 (1), pp. 771-783. Cited 6 times.
http://sphinxsai.com/sphinxsaiVol_2No.1/PharmTech_Vol_2No.1/PharmTech_Vol_2No.1PDF/PT=119%20(771-783).pdf

7 Gangurde, A., Patole, R.K., Sav, A.K., Amin, P.D.
A Novel directly compressible co-processed excipient for sustained release formulation (Open Access)

(2013) *Journal of Applied Pharmaceutical Science*, 3 (9), pp. 89-97. Cited 6 times.
http://www.japsonline.com/admin/php/uploads/1055_pdf.pdf
doi: 10.7324/JAPS.2013.3917

View at Publisher

8 Garg, N, Pandey, P, Kaushik, D, Dureja, H
Development of novel multifunction directly compressible co-processed excipient by melt granulation technique
(2015) *Int. J. Pharm. Investig*, 5 (4), pp. 266-274. Cited 14 times.

9 Habib, Y., Augsburger, L., Reier, G., Wheatley, T., Shangraw, R.
Dilution potential: A new perspective

(1996) *Pharmaceutical Development and Technology*, 1 (2), pp. 205-212. Cited 15 times.
doi: 10.3109/10837459609029895

View at Publisher

10 Hart, A
Effect of Particle Size on Detergent Powders Flowability and Tabletability
(2015) *J. Chem. Eng. Process. Technol*, 6, p. 215. Cited 13 times.

11 Herbert, AL, Lean, L, Josoph, BS
(1989) *Pharmaceutical dosage forms, tablets*. Cited 438 times.
2nd ed. 1989. New York: Marcel Decker

12 Hirani, J.J., Rathod, D.A., Vadalia, K.R.
Orally disintegrating tablets: A review (Open Access)

(2009) *Tropical Journal of Pharmaceutical Research*, 8 (2), pp. 161-172. Cited 173 times.
http://www.tjpr.org/vol8_no2/2009_8_2_10_Hirani.pdf
doi: 10.4314/tjpr.v8i2.44525

View at Publisher

13 Jagdale, S., Gattani, M., Bhavsar, D., Kuchekar, B., Chabukswar, A.
Formulation and evaluation of chewable tablet of levamisole

(2010) *International Journal of Research in Pharmaceutical Sciences*, 1 (3), pp. 282-289. Cited 13 times.
http://ijrps.pharmascope.org/index.php?option=com_jdownloads&Itemid=138&task=finish&cid=51&catid=4

14 Jiang, Y., Matsusaka, S., Masuda, H., Qian, Y.
Development of measurement system for powder flowability based on vibrating capillary method

(2009) *Powder Technology*, 188 (3), pp. 242-247. Cited 38 times.
doi: 10.1016/j.powtec.2008.05.003

View at Publisher

15 Liew, K.B., Peh, K.K.
Investigation on the effect of polymer and starch on the tablet properties of lyophilized orally disintegrating tablet

(2015) *Archives of Pharmacal Research*. Cited 6 times.
http://www.springerlink.com/content/0253-6269
doi: 10.1007/s12272-014-0542-y

View at Publisher

16 Nabors, L.O.
Alternative sweeteners: An overview

(2016) *Alternative Sweeteners: Fourth Edition*, pp. 1-10. Cited 35 times.
https://www.crcpress.com/Alternative-Sweeteners-Fourth-Edition/OBrien-Nabors/p/book/9781138198562
ISBN: 978-143984615-5; 978-113819856-2

17 Mullarney, M.P., Leyva, N.
Modeling pharmaceutical powder-flow performance using particle-size distribution data

(2009) *Pharmaceutical Technology*, 33 (3), pp. 126-134. Cited 27 times.

18 Mužíková, J., Eimerová, I.
A study of the compaction process and the properties of tablets made of a new co-processed starch excipient

(2011) *Drug Development and Industrial Pharmacy*, 37 (5), pp. 576-582. Cited 11 times.
doi: 10.3109/03639045.2010.530270

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19 Nachaegari, S.K., Bansal, A.K.
Coprocessed Excipients for Solid Dosage Forms

(2004) *Pharmaceutical Technology*, 28 (1), pp. 52-64. Cited 122 times.

20 Olinger, PM, Karhunen, A
(1991) *Directly compressible xylitol and method*
United State patent US 5204115

21 Patel, R.P., Bhavsar, Ms.M.
Directly compressible materials via co-processing

(2009) *International Journal of PharmTech Research*, 1 (3), pp. 745-753. Cited 18 times.
http://www.sphinxsai.com/PTVOL3/PT=55,%20RAKESH%20PATEL%20(745-753).pdf

22 Patel, S.S., Patel, N.M.
Development of directly compressible co-processed excipient for dispersible tablets using 3^2 full factorial design

(2009) *International Journal of Pharmacy and Pharmaceutical Sciences*, (1), pp. 125-148. Cited 21 times.
http://ijppsjournal.com/Vol%201%20Issue%201/125.pdf

23 Sandler, N., Reiche, K., Heinämäki, J., Yliruusi, J.
Effect of moisture on powder flow properties of theophylline (Open Access)

(2010) *Pharmaceutics*, 2 (3), pp. 275-290. Cited 30 times.
http://www.mdpi.com/1999-4923/2/3/275/pdf
doi: 10.3390/pharmaceutics2030275

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24 Staniforth, J, Aulton, M
(2002) *Pharmaceutics, The science of dosage form design*. Cited 858 times.
2nd ed. 2002. London: Churchill Livingstone

25 Zhou, X., Yang, J., Qu, G.
Study on synthesis and properties of modified starch binder for foundry

(2007) *Journal of Materials Processing Technology*, 183 (2-3), pp. 407-411. Cited 48 times.
doi: 10.1016/j.jmatprotec.2006.11.001

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Gaurav, A.; Faculty of Pharmaceutical Sciences, UCSI University, UCSI Height, No 1, Jalan Menara Gading, Cheras, Kuala Lumpur, Malaysia; email:anand@ucsiuniversity.edu.my

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