BAB V
KESIMPULAN DAN SARAN

A. Kesimpulan

Dari jurnal-jurnal yang sudah direview pada pembahasan, dapat disimpulkan bahwa bahan pengikat dan bahan pengisi sangat berpengaruh terhadap karakteristik tablet kunyah yaitu pada kekerasan, kerapuhan, dan waktu hancur.

Pada penambahan bahan pengikat untuk tablet kunyah maupun tablet effervescent, peningkatan konsentrasi zat pengikat dapat mempengaruhi peningkatan kekerasan dan menurunkan kerapuhan tablet. Sehingga ketepatan konsentrasi zat pengikat dalam pembuatan tablet kunyah harus sesuai untuk mendapatkan tablet yang sesuai dengan persyaratan dan lolos uji mutu fisik tablet.

Sedangkan bahan pengikat yang paling efektif dari hasil review jurnal diatas adalah PVP. Dikarenakan dengan konsentrasi yang kecil namun menghasilkan kerapuhan yang rendah dengan kekerasan yang tinggi. Sehingga PVP dianggap sebagai pengikat terbaik untuk tablet.

B. Saran

1. Perlu dilakukan penelitian lebih lanjut mengenai peningkatan penambahan konsentrasi gelatin sebagai bahan pengikat pada sediaan tablet kunyah.
2. Perlu dilakukan penelitian lebih lanjut mengenai penambahan variasi bahan pengikat pada sediaan tablet kunyah antasida dengan bahan lain.
3. Perlu dilakukan pengembangan formula tablet kunyah antasida agar dapat ditingkatkan lagi mutu dari sediaan tablet kunyah antasida sehingga dapat dibuat dalam skala yang besar.

DAFTAR PUSTAKA

A.K, N. (1995). *Sifat Fisik dan Stabilitas Tablet Kunyah Asetosal dengan Bahan Pengisi Kombinasi Manitol Laktosa.* Yogyakarta: Universitas Gadjah Mada.

Agoes, G. (2006). *Pengembangan Sediaan Farmasi* . Bandung: ITB.

Agoes, G. (2008). *Pengembangan Sediaan Farmasi, edisi revisi dan pengembangan.* Bandung : ITB.

Ahmad Shobib, M. S. (20017). Pengaruh Penambahan Carboxymethyl Cellulose (CMC) dan Gelatin Sebagai Bahan Pengikat Pada Pembuatan Tablet Kulit Manggis (Garcinia mangostana L.). *Jurnal Ilmiah Cendekia Eksakta*, 45-50.

Alderborn, G. a. (1996). *Pharmaceutical Powder Compaction Technology.* New York: Marcel Dekker Inc.

Angga Syaputra R.P., H. N. (2016). Pembuatan Sediaan Kapsul Daun Sirsak (Annona muricata Linn) dengan Metode Granulasi Basah. *Akademi Farmasi Yarsi Pontianak*, 23-24.

Ansel, H. A. (2005). *Pharmaceutical Dossage Forms and Drug Delivery Systems, 8 th Edition.* USA: Lippincott Williams and Wilkins.

Armstrong, N. (2006). *Handbook of Pharmaceutical Excipients.* Washington DC: American Pharmaceutical Associations.

Balai penelitian dan pengembangan Kesehatan, R. (2007). *Riset Kesehatan Dasar (RISKESDAS) 2007.* Jakarta: Kementrian Kesehatan Republik Indonesia.

Christian Rondonuwu, G. C. (2017). Formulasi Tablet Hisap Serbuk Buah Mangga Dodol (Magifera indica L) Dengan Menggunakan Metode Granulasi Basah. *Pharmacon Jurnal Ilmiah Farmasi-UNSRAT*, 111-117.

Fika Ardiani, A. P. (2012). Pengaruh Kadar Pati Sukun (Artocarpus altilis) Sebagai Bahan Pengikat Terhadap Karakteristik Fisik Tablet Kunyah Antasida Dengan Metode Granulasi Basah . *Akademi Farmasi Theresiana*, 1-5.

Gadhve Manoj V., G. V. (2016). FORMULATION DEVELOPMENT AND EVALUATION OF RAPIDLY DISINTEGRATING ANTACID TABLETS. *International Journal of Recent Scientific Research*, 1-5.

Lachman a, L. L. (1994). *Teori dan Praktek Farmasi Industri edisi III (Siti Suyatmin, Penerjemah).* Jakarta: UI Press.

Mehwish Khan, H. R. (2019). Formulation development of sugar free antacid chewable tablets for diabetes induced acidity in patients. *Pak. J. Pharm. Sci., Vol.32, No.6 (Suppl)*, 2811-2816.

N.D. Banerjee, S. .. (2013). FORMULATION AND EVALUATION OF ANTACID ANALGESIC TABLET. *International Journal of Pharmaceutical Sciences and Research*, 1-8.

Nova Safitri, I. G. (2014). Pengaruh Kenaikan Kadar Gelatin Sebagai Bahan Pengikat Terhadap Sifat Fisik Tablet Hisap Ekstrak Ekinase (Echinacea Purpurea Herb.) Secara Granulasi Basah. *Jurnal Prospek Farmasi Indonesia (JPFI)*, 21-24.

Nugrahani, I. R. (2005). *Karakteristik Granul dan Tablet Propranolol HCl dengan Metode Granulasi Peleburan.* Jakarta: Jurnal. Vol II: 100-109. .

Rahmani Aprinita, I. G. (2019). Pengaruh Perbandingan Konsentrasi Gelatin dan Polivinilpirolidon Sebagai Bahan Pengikat terhadap Sifat Fisik Tablet Hisap Ekstrak Kering Jahe Merah (Zingiber officinale Rosc.). *Repository UHAMKA*, 1-14.

Rani Dewi Pratiwi, M. M. (2017). Pengaruh Gelatin Sebagai Bahan Pengikat Terhadap Sifat Fisik Tablet Kunyah Kelopak Bunga Rosella (Hibiscus sabdariffa L.) Dengan Granulasi Basah . *Jurnal Farmasi Indonesia*, 33-39.

RI, D. (1979). *Farmakope Indonesia. Edisi III.* Jakarta: Departemen Kesehatan Republik Indonesia.

Sahat Pardamean S., A. F. (2014). Formulasi Tablet Kunyah Ekstrak Etanol Daun Sambiloto Dengan Variasi Pengisi Manitol-Dekstrosa. *Jurnal Mahasiswa Farmasi Fakultas Kedokteran UNTAN*, 1-7.

Tan, H. R. (2007). *Obat-Obat Penting, Khasiat, Penggunaan dan Efek Sampingnya.* Jakarta: PT Elek Media Komputindo, Gramedia.

Tri Dara A., I. S. (2011). Pengaruh Manitol Sebagai Bahan Pengisi Yang Di Variasikan Terhadap Sifat Fisik Tablet Antasida. *Phacmacy Vol. 08*, 64-71.

Tri Dara Aprilya, I. S. (2011). PENGARUH MANITOL SEBAGAI BAHAN PENGISI YANG DIVARIASIKAN TERHADAP SIFAT FISIK TABLET ANTASIDA. *Universitas Muhammadiyah Purwokerto*, 65-71.

Voight, R. (1995). *Buku Pelajaran Teknologi Farmasi (Terjemahan). Noerono, S. Edisi V.* Yogyakarta: UGM Press.

Widya Cahya Ariswati, A. S. (2010). Pengaruh Gelatin, Amilum dan PVP Sebagai Bahan terhadap Sifat Fisik Tablet Ekstrak Temulawak (Curcuma Xanthorrhiza Roxb) . *Jurnal Farmasi Indonesia*, 59-65.

Yeni Fitriana, T. S. (2010). Pengaruh Bahan Pengikat Gelatin dalam Formula Tablet Ekstrak Daun Kemuning (Murraya paniculata (L.) Jack) secara Granulasi Basah. *Jurnal Farmasi Indonesia*, 67-72.

LAMPIRAN

Lampiran 1. Jurnal 1

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PENGARUH MANITOL SEBAGAI BAHAN PENGISI YANG DIVARIASIKAN TERHADAP SIFAT FISIK TABLET ANTASIDA.

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ABSTRAK

Manitol merupakan salah satu jenis gula yang biasa digunakan sebagai pengisi tablet. Penelitian ini bertujuan untuk mengetahui pengaruh manitol sebagai pengisi terhadap sifat fisik tablet antasida. Tablet antasida dibuat menggunakan metode granulasi basah. Tablet dibuat tiga formula dengan konsentrasi manitol sebagai berikut: F I (11,70%), F II (8,12%), dan F III (4,23%). Granul diuji waktu alir granul. Tablet diuji sifat fisik meliputi keseragaman bobot, kekerasan tablet, kerapuhan, dan waktu hancur tablet. Data dianalisis dengan metode statistik ANOVA satu arah. Hasil menunjukan bahwa semakin besar konsentrasi manitol menyebabkan waktu alir granul semakin lama, tablet semakin keras, waktu hancur tablet semakin lama, kerapuhan tablet semakin kecil, dan keseragaman bobot tablet memenuhi persyaratan keseragaman bobot tablet menurut Farmakope Indonesia edisi III.

Kata Kunci : Manitol, Laktosa, Pengisi, Tablet Antasida, Sifat Fisik Tablet.

ABSTRACT

Mannitol is kind of poliol (alcohol sugar) which usualy used as tablet filler. The aim of this research is to know how the effect of mannitol as filler toward antacides tablet. Antacides tablet is made by wet granulation method, by mean in three formulas which relied on by different of diluent mannitol and laktosa, that is : F I (11,70%), F II (8,12%), dan F III (4,23%). Granule which were yielded were tested physically that flow rates there physically properties covering weight variation, the hardness, the friability, and the disintegration. The data were analized by statistic ANOVA one way method. The result of physicall properties of antacide tablet showed that the increasing of mannitol concentration the longer of granule flow rate, more in hardness, longer in disintegration time, smaller in friability, and the weight variation of tablet needs the requirement of the weight variation in Farmakope Indonesia 3rd edition.

Key Word: Mannitol, Lactoce, The Filler, Antacide Tablet, Tablet Physically Properties.

PENDAHULUAN

Antasida merupakan senyawa yang mempunyai kemampuan menetralkan asam klorida (lambung). Sediaan antasida dapat mengandung aluminium dan magnesium. Antasida dengan kandungan ini relatif tidak larut dalam air. Seperti magnesium karbonat, hidroksida, dan trisikilat serta gliserin dan hidroksida, bekerja lebih lama bila berada dalalambung sehingga sebagian besar tujuan pemberian antasida

Lampiran 2. Jurnal 2

PENGARUH KADAR PATI SUKUN (*Artocarpus altilis*) SEBAGAI BAHAN PENGIKAT TERHADAP KARAKTERISTIK FISIK TABLET KUNYAH ANTASIDA DENGAN METODE GRANULASI BASAH

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ABSTRACT

Breadfruit (Artocarpus altilis) has large amount of carbohydrate and known as an food alternative. Means to increase utilising breadfruit and economical value of it can do with using breadfruit's starch. Breadfruit's starch using as consipient in porpoise to create tablet. The ones is using breadfruit's starch as binding agent for chewable tablet. The research is experimental which is used breadfruit's starch as binding agent for antacid-chewable-tablet used wet granulation. The research design is Completely Randomized Design (CRD) in line. The concentration of breadfruit's starch which used is 3%, 5%, and 7%. The result of characteristics test has done. The data obtained were compared with the literatur and analyzed statistically byone way Anova and Kruskall-Wallis method. The results showed that breadfruit's starch effect on hardness, friability, and disintegration time but had no effect on organoleptic, dimension, and weight uniformity of antacid-chewable-tablet. Tablet with concentration 7% of breadfruit's strach showed the best results of characteristics.

***Keywords**: breadfruit's starch, binding agent, physically characteristics, chewable tablet.*

PENDAHULUAN

Tablet kunyah merupakan tablet yang akan segera hancur ketika dikunyah (Chaerunissa, dkk., 2009). Tablet kunyah antasida merupakan segmen yang paling besar dalam pemasaran sediaan tablet kunyah (Agoes, 2012). Antasida merupakan basa lemah seperti aluminium hidroksida dan magnesium hidroksida yang digunakan untuk menetralkan asam lambung berlebihan (Tjay dan Kirana, 2007). Tablet kunyah dapat dibuat dengan berbagai metode, salah satunya yaitu metode granulasi basah. Tablet kunyah dirancang dengan kekerasan yang lebih rendah dari tablet konvensional untuk menjamin dalam mengunyah tablet. Bahan tambahan yang berpengaruh terhadap kekerasan tablet kunyah adalah bahan pengikat (Agoes, 2008).

Salah satu bahan yang dapat digunakan sebagai pengikat tablet yaitu pati. Pati dapat ditemukan pada bagian tanaman yang memiliki kadar karbohidrat cukup tinggi seperti buah sukun (*Artocarpus altilis*). Berdasarkan latar belakang tersebut perlu dilakukan penelitian tentang pengaruh kadar pati

Lampiran 3. Jurnal 3

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Research Article

FORMULATION DEVELOPMENT AND EVALUATION OF RAPIDLY DISINTEGRATING ANTACID TABLETS

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ABSTRACT

Aluminum hydroxide is an effective oral antacid. It is available in form of dried aluminum hydroxide gel consist largely of hydrated aluminium oxide together with varying quantities of basic aluminium carbonate & bicarbonate. Rapidally disintegrating tablets are those that dissolve or disintegrate quickly in the oral cavity, resulting in solution or suspension. The effectiveness of formulation was tested by Rosette-Rice test.

INTRODUCTION

Aluminium hydroxide and Magnesium trisilicate are used as a antacid to treat conditions caused by the acid that is produced by the stomach. The stomach naturally secretes an acid i.e. hydrochloric acid which cause the contents of the stomach to be acidic in nature. Antacid perform a neutralization reaction, principal mechanism of action is reduce the intragastric acidity. They directly neutralize acid, thus raising the gastric ph this also has the effect of inhibiting the activity of peptic enzymes. Antacid inhibit the conversion of pepsionogen to pepsin, which depends on the degree of acid neutralization.7

Oral disintegrating antacid tablet are solid single unit dosage forms that are to be placed in the mouth, allowed to disperse or dissolve in the saliva, and then swallowed without the aid of additional water. Formulated Oral disintegrating tablet should disintegrate in the mouth within seconds.

MATERIAL AND METHODS-[1-3]

Dried aluminium hydroxide gel and magnesium trisilicate are the main drug purchase from SD fine chem. Ltd. mumbai. The other excipient use are SSG, cross carmellose sodium, crospovidone, microcrystalline cellulose, magnesium stearate, mannitol, talc, saccharin sodium.

Formulation of Tablets-[1,3,6]

Rapidly disintegrating antacid tablet was formulated by using direct compression method.

Formula for rapidly disintegrating antacid tablet. Evaluation of formulated tablet

Preformulation Study

Angle of repose

Angle of repose has been used to describe flow properties of solids. A funnel with 10mm inner diameter of stem was fixed at height of 2cm over the platform.10gm sample was slowly passed through the wall of funnel until the tip of pile formed and touches to the stem of funnel. a rough circle was drawn around the pile base and radius of powder cone was measured. Angle of repose determined by following formula

Angle of repose=$\tan^{-1}(h/r)$

Bulk density

Accurately weighed 5 gm of powder blend was transferred in 50ml graduated cylinder. Powder was carefully leveled without compact in and read the unsettled apparent bulk volume. Bulk density determined by following formula- Bulk density=Wt of powder in gm/Bulk volume Tapped density-Accurately weighed 5gm blend was transferred in 50ml graduated cylinder. Then the cylinder was, mechanically tapped by raising the cylinder and allowing it to drop under its own

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Lampiran 4. Jurnal 4

Formulation development of sugar free antacid chewable tablets for diabetes induced acidity in patients

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Abstract: Sugar free chewable tablets are considered to be desired medication for diabetic population having acid reflex problems. The main objective of this study is to develop a patient complaint tablet dosage form which is sugar free, chewable and easy to use. The formulation is designed for hyperglycemic and dysphasic patients along acidity or stomach ulcer. For manufacturing Aluminum Hydroxide (Kyowa Japan), Magnesium Hydroxide (Taurus chemicals India) Simethicone, Povidone (JRS Pharma) Sorbitol powder, Magnesium stearate, Dilcalcium phosphate anhydrous, SSG (JRS Pharma) and Aspartame were used. The granules are formed by wet granulation method and tablets are compressed by rotary compression machine. The pre-formulation studies of granules (Angle of repose, Bulk/Tapped density, Carr's compressibility index and Hausner's ratio), uniformity of content (assay), acid neutralizing capacity, Identification by FTIR spectroscopy all are found within the limits as per USP specifications. All three formulation batches are stable under accelerated and ambient stability conditions for 6 months and 24 months respectively. The formulation development of sugar free oral chewable antacid tablet is pharmaceutically stable and can further analyze for safety and efficacy studies.

Keywords: Sugar free, acidity, chewable tablet, diabetes mellitus, antacid.

INTRODUCTION

Indigestion (Malavade and Hiremath, 2017) is a typical sign often leads towards heartburn, a condition where a portion of the gastric contents are constrained back up into the esophagus. It produces a burning sensation in the lower side of the chest (Soscia NP-Paeds and Friedman, 2011).Gastroesophageal reflux disease (GERD) is the disease in which persistent acid reflux taken place more than two times per week. Acid reflux or heartburn is a common effect of Gastroesophageal reflux disease (GERD) (Katz *et al*., 2013).

Patients with diabetes have high amounts of (glucose) in blood. That high glucose levels can harm the nerve (vagus nerve) which controls the gastric movements. Due to vagus nerve damage, the stomach muscles unable to perform regular function. The condition is called gastroparesis or delayed gastric emptying. Type 2 diabetes is known for gastroparesis (Association, 2014, Camilleri *et al*., 2013).

People with type II diabetes are obese and have frequent complain of GERD. As per World Journal of Gastroenterology 2008, GERD affects 40% of individuals with diabetes. Scientists observed that GERD effects with diabetes and creates complication including neuropathy extra pyramidal effects and neuropathies etc (Westerberg, 2013).

Various antacids are commercially available to relief hyperacidity and heart burn such as sodium bicarbonate, magnesium bicarbonate, Milk of magnesia, Sodium alginate, Calcium carbonates etc. The mentioned salts are available solely and in combination in market. The general mechanism of action of all antacids is neutralizing the acid content in stomach. The symptoms of heart burn characterized by a burning sensation in the chest after eating and lasts a few minutes to several hours or feeling of burning in the esophagus (Zerbib *et al*., 2012). For the relief of heart burning in the stomach the use of antacid formulation are quite common (Lødrup *et al*., 2013). Antacids neutralize stomach acids which relives the acid reflux (Camilleri *et al*., 2013). As antacids are quickly leaves from the stomach about one hour after a meal. Calcium-based antacids are only good for occasional symptoms because they may stimulate even more acid build-up if used regularly. Also, aluminum-based antacids may cause constipation, while magnesium-based may trigger diarrhea (Lødrup *et al*., 2014). A combination of Aluminum hydroxide along with magnesium hydroxide and simethicone is very effective for the relief of

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