

INTISARI

DEWI, R.R., 2019. MODIFIKASI BENTUK KRISTAL GEMFIBROZIL MELALUI TEKNIK SPHERICAL CRISTALIZATION MENGGUNAKAN METODE SPHERICAL AGGLOMERATION, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Gemfibrozil adalah golongan asam fibrat generasi pertama turunan fibrat dan klofibrat. Berdasarkan *Biopharmaceutis Clasification System* (BCS), gemfibrozil termasuk obat kelas II yang memiliki kelarutan rendah dan permeabilitas tinggi. Kelarutan gemfibrozil yang rendah dalam air (praktis tidak larut dalam air) menyebabkan disolusi rendah. Penelitian ini bertujuan untuk mendapatkan kristal sferis dan melihat perbandingan kelarutan gemfibrozil murni dan gemfibrozil sferis menggunakan metode spherical agglomeration.

Penelitian ini menggunakan 3 formula dengan variasi polimer PVP 2%, PVA 2%, PEG 4000 2%. Proses pembuatan menggunakan metode *Spherical agglomeration* dengan menggunakan etanol (pelarut baik), air (pelarut buruk), etil asetat (*briggings*) dan penambahan polimer. Kristal sferis di karakterisasi menggunakan mikroskop opti, *X-ray Diffractometry* (XRD), *Scanning Electron Microscopy* (SEM), Uji kelarutan Gemfibrozil sferis dilakukan dalam medium aquadest dan diukur dengan spektrofotometri UV-Vis pada panjang gelombang 274 nm.

Hasil menunjukkan kristal sferis berbentuk bulat dengan ukuran 1 mm dengan perbesaran 50x, pada difraktogram XRD menunjukkan adanya puncak tajam dalam difraktogram XRD dari gemfibrozil sferis dengan ketinggian 10 kali lebih rendah dari gemfibrozil murni menunjukkan bahwa modifikasi kristal telah terjadi tanpa perubahan polimorfik. Kelarutan gemfibrozil sferis 7,307 mg/ml dan rendemen yang dihasilkan 93,117%. Kesimpulan gemfibrozil berhasil dikembangkan menjadi kristal sferis metode *Spherical agglomeration* dan dapat meningkatkan kelarutan dan sifat mikromeritik.

Kata kunci : Gemfibrozil, Spherical Agglomeration, kelarutan, SEM

ABSTRACT

DEWI, R.R., 2019, MODIFICATION OF GEMFIBROZIL CRYSTAL FORMS THROUGH THE SPHERICAL CRISTALIZATION TECHNIQUE USING THE SPHERICAL AGGLOMERATION METHOD, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Gemfibrozil is the first generation fibric acid group of fibrates derivatives and clofibrates. According to be Biopharmaceutics Classification System (BCS), gemfibrozil include class II drugs which had low solubility and high permeability. Gemfibrozil low solubility in water (practically insoluble) causes low dissolution. This study aimed to obtain spherical crystals and to see the comparison of pure gemfibrozyl and gemfibrozil spherical solubility using the spherical agglomeration method. The process of making this method the parameters used are the number and method of adding liquid brigging, temperature and stirring speed to get the maximum spherical crystal.

This study uses 3 formulas with a variation of 2% PVP polymer, 2% PVA, 2% PEG 4000. The manufacturing process uses the Spherical agglomeration method using ethanol (good solvent), water (haze solvent), ethyl acetate (brigging) and polymer addition. Spherical crystals were characterized using optical microscopy, X-ray Diffractometry (XRD), Scanning Electron Microscopy (SEM), Gemfibrozil spherical solubility test carried out in aquadest medium and measured by UV-Vis spectrophotometry at a wavelength of 274 nm.

The results showed a 1 mm round spherical crystal with a magnification of 50x, on XRD diaphragm showed a sharp peak in the XRD diffractogram of spherical gemfibrozil with a height 10 times lower than pure gemfibrozil showed that crystal modification had occurred without polymorphic changes. Solubility of gemfibrozil spherical 7,307 mg / ml and the yield produced 93,117%. Conclusion, Gemfibrozil has been successfully developed into spherical crystals of the Spherical agglomeration method and can improve solubility and micromeritic properties.

Keywords: Gemfibrozil, Spherical Agglomeration Technique, solubility