

**STUDI LITERATUR
PENINGKATKAN KELARUTAN DAN DISOLUSI KOAMORF
OBAT SUKAR LARUT AIR
GOLONGAN ASAM KARBOKSILAT**

SKRIPSI

**JAN REZA PUTRA
A182015**



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YAYASAN HAZANAH
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Sebagai salah satu syarat untuk memperoleh gelar Sarjana Farmasi

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Oktober 2022

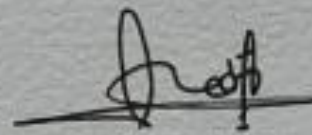
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Kutipan atau saduran baik sebagian ataupun seluruh naskah, harus menyebut nama pengarang dan sumber aslinya, yaitu Sekolah Tinggi Farmasi Indonesia

Kupersembahkan skripsi ini untuk Mama, Papa, dan Adik-adik tercinta yang selalu memberikan semangat, dukungan moral, cinta dan kasih di sepanjang perjalanan hidup. Terima kasih atas segala kebaikan yang diberikan yang terasa hingga saat ini dan seterusnya”

ABSTRAK

Beberapa obat termasuk dalam kelompok asam karboksilat yang sedikit larut dalam air. Obat yang sukar larut dalam air dapat menyebabkan disolusi dan bioavailabilitas yang buruk sehingga menghambat aktivitas obat. Salah satu solusi untuk mengatasi masalah tersebut adalah dengan pembentukan koamorf. Kajian literatur ini bertujuan untuk mengetahui pengaruh pembentukan koamorf terhadap peningkatan kelarutan dan disolusi obat golongan asam karboksilat. Kajian yang disusun berupa *systematic review journal* menggunakan protokol PICOC (*Population, Intervention, Comparison, Outcomes, and Context*). Tinjauan literatur menunjukkan koamorf *binary system* furosemid menggunakan verapamil HCl sebagai koformer dengan rasio molar 1:2 mengalami peningkatan kelarutan terendah yaitu 0,07 kali dan koamorf *binary system* indometasin menggunakan histidin sebagai koformer dengan rasio molar 1:1 mengalami peningkatan disolusi terendah, yaitu sebesar 1,25 kali. Koamorf *ternary system* valsartan menggunakan arginin dan histidin sebagai koformer dengan rasio molar 1:1:1 mengalami peningkatan kelarutan dan disolusi sebesar 222 kali dan 1260 kali secara berturut-turut. Ikatan hidrogen dan pembentukan garam bertanggung jawab atas peningkatan kelarutan dan disolusi valsartan. Berdasarkan kajian literatur ini disimpulkan bahwa strategi terbaik untuk mendapatkan koamorf yang memiliki kelarutan dan disolusi tinggi adalah koamorf sistem *ternary* pada rasio molar 1:1:1 menggunakan koformer golongan asam amino (arginin) dan metode *milling* yang mampu membentuk ikatan hidrogen dan garam.

Kata Kunci: Koamorf, kelarutan, disolusi, obat sukar larut air

ABSTRACT

Some drugs belong to the group of poorly water-soluble carboxylic acids. Drugs that are poorly soluble in water can cause poor dissolution and bioavailability, thereby inhibiting drug activity. One solution to overcome this problem is the formation of coamorphous. This literature review aims to determine the effect of coamorphous formation on increasing the solubility and dissolution of carboxylic acid drugs. The study was created in the form of a systematic review journal according to the PICOC protocol (Population, Intervention, Comparison, Outcomes, and Context). The literature review showed that the coamorphous of the binary system of furosemide using verapamil HCl as a coformer with a 1:2 molar ratio had the lowest increase in solubility of 0.07-fold and the binary coamorph of the indomethacin system using histidine as the Coformer with a 1:1 molar ratio experienced the lowest increase in resolution of 1.25 times. The valsartan ternary coamorphous system using arginine and histidine as coformers in a 1:1:1 molar ratio experienced a 222-fold and 1260-fold increase in solubility and resolution, respectively. Hydrogen bonding and salt formation are responsible for the increased solubility and dissolution of valsartan. Based on this literature review, it was concluded that the best strategy to obtain a coamorphous with high solubility and dissolution was a ternary system coamorphous in a 1:1:1 molar ratio using amino acid group coformers (arginine) and milling methods that are capable of forming hydrogen bonds and salts.

Keywords: *Coamorphous, solubility, dissolution, slightly soluble drugs*

KATA PENGANTAR

Salam sejahtera semua,

Puji dan syukur penulis panjatkan ke hadirat Tuhan Yang Maha Esa atas segala berkat rahmat dan izin-Nya penulis dapat menyelesaikan penulisan dan penelitian skripsi yang berjudul **“Studi Literatur Peningkatan Kelarutan dan Disolusi Koamorf Obat Sukar Larut Air Golongan Asam Karboksilat”** yang merupakan salah satu syarat untuk memperoleh gelar Sarjana Farmasi di Sekolah Tinggi Farmasi Indonesia

Dalam menyelesaikan skripsi ini, penulis mengucapkan terima kasih kepada dosen pembimbing apt. Revika Rachmaniar, M.Farm. dan apt. Ledianasari, M.Farm. yang telah memberikan bimbingan, saran serta arahan selama menjalankan penelitian dan penyusunan skripsi

Tidak lupa pula penulis mengucapkan terima kasih yang sebesar-besarnya kepada:

1. Dr. apt. Adang Firmansyah, M.Si. selaku Ketua Sekolah Tinggi Farmasi Indonesia,
2. Dr. apt. Diki Prayugo Wibowo, M.Si. selaku Wakil Ketua I Bidang Akademik
3. Dr. apt. Wiwin Winingsih, M. Si. selaku Ketua Program Studi Sarjana Farmasi Sekolah Tinggi Farmasi Indonesia,
4. Dr. Syarif Hamdani, M.Si. selaku Dosen Wali yang telah memberikan bimbingan, arahan, serta dukungan semangat kepada penulis
5. Seluruh staf dosen, staf administrasi serta karyawan Sekolah Tinggi Farmasi Indonesia,
6. Serta sahabat-sahabat angkatan 2018 yang telah memberikan inspirasi dan dukungan moral selama penulis kuliah di Sekolah Tinggi Farmasi Indonesia.

Dalam penyusunan skripsi ini, penulis menyadari kemungkinan adanya kesalahan dan kekurangan karena pengetahuan yang masih terbatas. Semoga skripsi ini dapat memberikan manfaat, tidak hanya bagi penulis namun juga bagi pihak-pihak lain yang berkepentingan.

Bandung, 10 Oktober 2022

Penulis

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