

**PEMBUATAN MULTIKOMPONEN KRISTAL NAPROXEN DENGAN KOFORMER  
MEGLUMIN MENGGUNAKAN METODE  
SOLVENT EVAPORATION**

**ABSTRAK**

Naproxen merupakan obat golongan NSAID yang memiliki kelarutan rendah sehingga dapat mempengaruhi bioavailabilitasnya. Penelitian ini bertujuan untuk meningkatkan kelarutan dan laju disolusi naproxen melalui pembentukan multikomponen kristal dengan meglumin menggunakan metode solvent evaporation. Naproxen dan meglumin dicampurkan dalam perbandingan molar 1:1, kemudian dikarakterisasi menggunakan Differential Scanning Calorimetry (DSC), analisis ini memperlihatkan titik leleh. Powder X-Ray Diffraction (XRD), Hasil analisis XRD menunjukkan adanya perubahan pola difraksi yang mengindikasikan terbentuknya fase kristal baru. dan Fourier Transform Infrared Spectroscopy (FTIR) untuk menganalisis perubahan struktur kristal dan interaksi molekul antar komponen. Hasil uji kelarutan menunjukkan bahwa multikomponen kristal naproxen-meglumin memiliki kelarutan hingga dua kali lebih tinggi dibandingkan naproxen murni. Selain itu, pada uji disolusi terjadi peningkatan signifikan pada menit ke-60, dimana persentase disolusi sistem multikomponen mencapai 68,33%, sedangkan naproksen murni hanya 34,95%. Berdasarkan hasil tersebut, pembentukan multikomponen kristal naproxen-meglumin berpotensi meningkatkan sifat biofarmasetika naproxen

**Kata Kunci:** Naproksen, Meglumin, Multikomponen Kristal, Solvent Evaporation, Kelarutan, Laju Disolusi, XRD, DSC, FTIR

**MANUFACTURING MULTICOMPONENT NAPROXEN CRYSTALS WITH**

## MEGLUMIN COFORMERS USING THE METHOD SOLVENT EVAPORATION

### ABSTRACT

Naproxen is an NSAID drug with low solubility, which can affect its bioavailability. This study aims to increase the solubility and dissolution rate of naproxen through the formation of multicomponent crystals with meglumine using the solvent evaporation method. Naproxen and meglumine were mixed in a 1:1 molar ratio, then characterized using Differential Scanning Calorimetry (DSC), which showed the melting point. Powder X-Ray Diffraction (XRD) analysis showed a change in the diffraction pattern, indicating the formation of a new crystalline phase. Fourier Transform Infrared Spectroscopy (FTIR) was used to analyze changes in crystal structure and molecular interactions between components. Solubility test results showed that the naproxen-meglumine multicomponent crystal had a solubility up to twice as high as pure naproxen. In addition, the dissolution test showed a significant increase at 60 minutes, where the dissolution percentage of the multicomponent system reached 68.33%, while pure naproxen was only 34.95%. Based on these results, the formation of naproxen-meglumine multicomponent crystals has the potential to improve the biopharmaceutical properties of naproxen.

**Keywords:** Naproxen, Meglumine, Multicomponent Crystals, Solvent Evaporation, Solubility, Dissolution Rate, XRD, DSC, FTIR