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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	The Optimum Conditions of Carboxymethyl Chitosan Synthesis on Drug Delivery Application and Its Release of Kinetics Study		
Jumlah Penulis	:	6 orang		
Status Pengusul	:	penulis ke-1		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	Indonesian Journal of Chemistry
		b. Nomor ISSN	:	Online ISSN: 2460-1578, Print ISSN: 1411-9420
		c. Vol, No., Bln Thn	:	Vol. 17, No. 2, Juli 2017
		d. Penerbit	:	Chemistry Department, Universitas Gajah Mada
		e. DOI artikel (jika ada)	:	10.22146/ijc.24252
		f. Alamat web jurnal	:	https://jurnal.ugm.ac.id/ijc/issue/view/2720
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		g. Terindeks	:	Scopus/Scimagojr/SJR=0,24 (2019) dan Q3

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b. Ruang lingkup dan kedalaman pembahasan (30%)	12,0			11
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12,0			12,0
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,0			12,0
Total = (100%)	**40,0**			**39,0**
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1. **Kesesuaian dan kelengkapan unsur isi jurnal:** Artikel yang dipaparkan oleh penulis telah memenuhi unsur karya ilmiah, yang meliputi; pendahuluan, metodologi penelitian, hasil dan pembahasan, kesimpulan, dan referensi. Bab satu dengan yang lainnya saling terkait. Referensi yang digunakan berasal dari jurnal yang bereputasi berjumlah 35. (4)
2. **Ruang lingkup dan kedalaman pembahasan:** Pembahasan dalam artikel ini mencakup tentang aplikasi *drug delivery* oleh karboksimetil citosan. Beberapa hal yang dibahas adalah analisa FTIR dan XRD, kelarutan dalam air, serta studi kinetika bagaimana vitamin yang terenkapsulasi dengan karboksimetil citosan release dalam air destilasi. Penulis mampu menjelaskan kemampuan enkapsulasi melalui model matematika, serta secara eksperimen empiris. Artikel juga membahas mengenai model kinetika yang terjadi dalam efisiensi enkapsulasi, yang mengikuti orde nol dan hasil efisiensi yang cukup baik, namun belum optimum. Namun ada kelemahan dalam analisa Vit C dalam eksperimen empiris yang mengandalkan UV. (11)
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:** Penyajian data penelitian dijabarkan dengan baik oleh penulis dan saling menjelaskan hasil satu sama lain. Metode yang digunakan cukup mutakhir dan rujukan dalam penyajian informasi penelitian berasal dari jurnal yang bereputasi. (12)
4. **Kelengkapan unsur dan kualitas terbitan:** Indonesian Journal of Chemistry adalah jurnal internasional, peer-review akses terbuka yang menerbitkan artikel penelitian asli, review, dan komunikasi singkat di semua bidang kimia, termasuk kimia terapan. Jurnal ini sudah terindeks scopus dengan nilai SJR 0.24 (2019). Frekuensi terbitan telah mencapai enam nomor pertahun. Sehingga kualitas jurnal dan capaian terbitan jurnal internasional bereputasi sudah terpenuhi (12)

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Prof. Dr. Muhammad Cholid Djunaidi, S.Si., M.Si
NIP 19700702 199603 1 004
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2. **Ruang lingkup dan kedalaman pembahasan:** Artikel ini berisi tentang karboksimetil kitosan yang dapat digunakan sebagai pembawa untuk enkapsulasi vitamin dan pelepasan terkontrol. FTIR dan XRD digunakan untuk memperkirakan gugus fungsi dan kristalinitas serta membahas temperatur optimum dan konsentrasi NaOH yang digunakan. Penulis mengkonfirmasi enkapsulasi nikotinamida dan kinetika pelepasan nikotinamida dari CMCs melalui spektrofotometri UV-Vis. Penulis mampu menyusun pembahasan secara jelas dan mudah dipahami. Namun, pada artikel ini belum dapat menentukan jenis CMCs yang dapat digunakan sebagai pembawa untuk enkapsulasi.
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:** Penelitian telah menghasilkan data/informasi yang berkaitan sehingga dapat saling menjelaskan. Metodologi yang diuraikan mudah untuk dipahami. Pada artikel ini, data/informasi dan metodologi sudah cukup dan mutakhir karena telah menyertakan referensi dari jurnal ilmiah bereputasi**.**
4. **Kelengkapan unsur dan kualitas terbitan:** : Artikel ini sudah memenuhi kualitas terbitan karena diterbitkan oleh Indonesian Journal of Chemistry yang merupakan jurnal internasional. Indonesian Journal of Chemistry menerbitkan hasil penelitian, ulasan, dan komunikasi singkat di bidang kimia, sehingga dapat menjadi sumber utama penelitian mutakhir. Indonesian Journal of Chemistry terindeks scopus dengan nilai SJR = 0,24 (2019).

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a. Kelengkapan unsur isi jurnal (10%)	4,00	4,00	4
b. Ruang lingkup dan kedalaman pembahasan (30%)	11,00	12,00	11.5
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12,00	11,50	11,75
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00	11,50	11,75
Total = (100%)	**39,00**	**39,00**	**39**
Nilai Pengusul = (60% x 39) = 2,34			

Semarang, 8 April 2023

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The optimum conditions of carboxymethyl chitosan synthesis on drug delivery application and its release of kinetics study

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Abstract

In this paper, carboxymethyl chitosan (CMC) was synthesized and studied as a carrier to encapsulate vitamin (as drug model) and controlled release. Chitosan (CS) is a polycationic derivated from chitin,

which suitable for active substance carrier system on biomedical function. CS has good properties such as non-toxic, biodegradable, and biocompatible. However, CS insoluble in an aqueous solvent so CS was modified chemically into CMC. CMC was formed by reacting CS and monochloroacetic acid with sodium hydroxide (NaOH) as a catalyst. Optimation was performed by varying the NaOH concentration during alkalizing the CS and the temperature reaction. The functional group and crystallinity of CS and CMC were estimated by FTIR and XRD. The degree substitution of carboxymethylation has an average value of 0.60. The results show optimum temperature reaction and NaOH concentration were 60 °C and 40% (w/v). The nicotinamide (NA), a hydrophilic vitamin, was loaded within CMC matrix system through in vitro precipitation method. To confirm the encapsulation of NA in CMC and the release kinetics of NA from CMC in distilled water was studied through UV-Vis spectrophotometry. The release profile of NA from CMC matrix system carried out for 3 h and 12 h. The rate of NA release from CMC increases with increasing time and the follows a zero order, Higuchi, and Korsmeyer-Peppas kinetics rules.

Author keywords

Carboxymethyl chitosan; Encapsulation; NaOH concentration; Release kinetics; Temperature reaction

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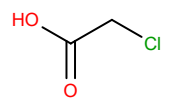

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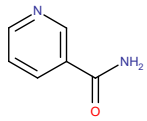

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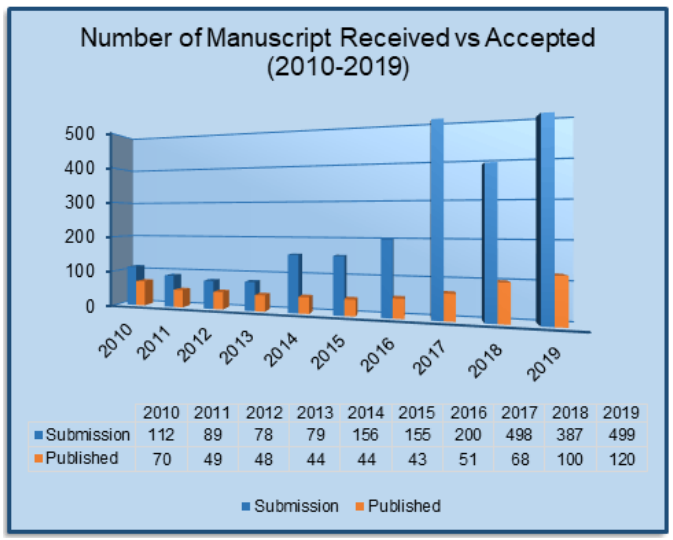

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Home-Made Micro Valve for Determining Malachite Green Dye by Flow Injection Analysis

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Abstract

The research is included studying and designing micro flow injection system which is characterized with rapidity, simplicity, and low cost for the determination of green malachite dye. The study of flow rate of carrier stream, repeatability, dispersion coefficient, and calibration graph are conducted. It is found that the optimum conditions for the determination of mentioned dye are flow rate 4.200 mL/min, sampling rate 102 sample/h, limit of detection 0.05 ppm, linear range (0.05-18.00) ppm with linearity (R^2=0.9700), RSD is 0.355, the repeatability for seven successive injections is studied for the two concentrations 5 ppm and 12 ppm, and the dispersion coefficient values are 1.73 and 1.28 at the two concentrations 2 ppm and 9 ppm respectively.

Keywords

µFlow injection; green malachite dye; home-made micro valve

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Cobalt Oxide-Modified Titanium Dioxide Nanoparticle Photocatalyst for Degradation of 2,4-Dichlorophenoxyacetic Acid

https://doi.org/10.22146/ijc.22624

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Abstract

2,4-dichlorophenoxyacetic acid (2,4-D) has been recognized as a possibly carcinogenic compound to human, therefore, 2,4-D should be treated before it is discharged to the environment. Photocatalytic degradation of 2,4-D has been proposed as one of the best methods that offer environmentally safe process. In the present research, titanium dioxide (TiO_2) was modified with cobalt oxide (CoO) and tested for photocatalytic degradation of 2,4-D under UV light irradiation. Different amounts of CoO (0.1, 0.5, 1 and 5 mol%) were added onto TiO_2 by an impregnation method. The photocatalytic reaction was monitored and analyzed by measurement of 2,4-D absorbance using UV spectrophotometer. After 1 h photocatalytic reaction, it was confirmed that the sample with low loading of 0.1 mol% gave the highest photocatalytic activity among the bare and modified TiO_2 photocatalysts. The photocatalytic activity was decreased with the increase of CoO loading, suggesting that the optimum amount of CoO was an important factor to improve the performance of TiO_2. Based on fluorescence spectroscopy, such addition of CoO resulted in the reduced emission intensity, which showed the successful decrease in the electron-hole recombination.

Keywords

2,4-D herbicide; UV light; titanium dioxide; cobalt oxide; photocatalyst

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