



وزارة التعليم العالي والبحث العلمي
جامعة ميسان
كلية التربية الاساسية

Ministry of Higher Education and Scientific
Research
University of Misan
College of Basic Education

Misan Journal for Academic Studies
Humanities, social and applied sciences

مجلة ميسان للدراسات الأكاديمية العلوم الانسانية والاجتماعية والتطبيقية

ISSN (Print) 1994-697X
(Online)-2706-722X

المجلد 24 العدد 53 اذار 2025

Mar 2025 Issue53 VOL24



مجلة ميسان للدراسات الاكاديمية

العلوم الإنسانية والاجتماعية والتطبيقية

كلية التربية الأساسية / جامعة ميسان / العراق

Misan Journal for Academic Studies

Humanities, social and applied sciences

College of Basic Education/University of Misan/Inq

ISSN (Print) 1994-697X (Online) 2706-722X

2025	اذار	العدد 53	المجلد 24
2025	Mar	Issue53	VOL24



OJS / PKP
www.misan-jas.com

IRAQI
Academic Scientific Journals



ORCID

OPEN ACCESS



 journal.m.academy@uomisan.edu.iq

رقم الابداع في دار الكتب والوثائق بغداد 1326 في 2009

الصفحة	فهرس البحوث	ت
14 - 1	Evaluation of anti-plaque and anti-inflammatory efficacies of mouth rinse containing green tea and <i>Salvadora Persica L.</i> in the management of dental biofilm-induced gingivitis Aliaa Saeed Salman Maha Abdul Azeez Ahmed	1
26 - 15	Evaluation of galectin-3 and peptidyl arginine deiminase-4 levels in saliva for periodontal health, gingivitis and periodontitis Yusur Ali Abdulrazzaq Alaa Omran Ali	2
37 - 27	EFFECT OF HYPOCHLOROUS ACID ON SURFACE ROUGHNESS AND WETTABILITY OF ZINC OXIDE EUOGENOL IMPRESSION PASTE Israa J.Taha Shorouq M. Abass	3
47 - 38	Annual groundwater recharge estimation in Nineveh plain, northern Iraq using Chloride Mass Balance (CMB) method Fatima AJ. Abdul Wahab Alaa M. Al-Abadi	4
61 - 48	A Theoretical Study for Excitation of Electrons Collides with Positive Nitrogen Ions Hawraa S. Kadhim Alaa A. Khalaf	5
72 - 62	Green synthesis of gold nanoparticles (AuNPs) using pathogenic bacteria <i>Acinetobacter baumannii</i> with evulation their antibacterial activity Hawraa Khalaf Abbood Rashid Rahim Hateet	6
82 - 73	Structural, Optical and Gas Sensor Properties of Zinc Oxide Nanostructured thin films prepared by Chemical Spray Pyrolysis Ameer I. Khudadad Ezzulddin Abdoulsahib Eesee	7
91 - 83	Soft denture liner and its additives (A review of literature) Ibrahim Ali Al-Najati Ghasak Husham Jani	8
103 - 92	A Critical Discourse Analysis of the Language of Persuasion in Political Discourse Mohammed Hussein Hlail	9
116 - 104	A Comprehensive Review of Rice Husk Derived Silica As Nano Filler (A review of literature) Azza Walaaldeen Khairi Huda jaafar naser	10
125 - 117	Evaluation of Superoxide Dismutase and their association with Diabetic neruopathy and Heart disease in Iraq populations Zainab A. Salman	11
139 - 126	Schema Theory in Sarah Moss's "The Fell": A Cognitive Stylistic Study Salah R. Al-Saed Nazar Abdul Hafidh Abeid	12
149 - 140	Validation and Development of UV spectroscopy method for the Estimation of Diclofenac sodium in Bulk and dos protected mode interface Mohammed R . Abdul - Azeez	13
167 - 150	Using A Genetic Algorithm to Solve the Inventory Model with A Practical Application Ahmed Jamal Mohammed Al-Botani Faris Mahdi Alwan Al-Rubaie	14
180 - 168	Seasonal Variatins of Polychlorinted Biphenyls compounds in Water of Tigris River , Maysan Province / Iraq Halima Bahar Kazem and Salih Hassan Jazza	15

200 - 181	The Reasons Behind the Societal Reversal on the Governance of Amir al-Mumineen After the Prophet's Death (Peace (PBUH)) Through the Sermons of Lady Fatima al-Zahra (Peace Be Upon Her) Fatima Abd Saeed Al-Maliki	16
217 - 201	The place and its Implications in Adghat Madinah novel " Saja Jasim Mohammed Assistant Instuctor	17
233 - 218	The Level of Strategic Thinking Among School Principals in the Center of Misan Governorate from the Perspective of Their Teachers Multaka Nasser Jabbar	18
253 - 234	The reality of the practice of Arabic language teachers in the primary stage of reciprocal teaching from the perspective of the specialty supervisors Khadija Najm Abdel Qader Ramla Jabbar Kazem	19
274 - 254	Optimal storage model to sustain the operation of Baghdad stations Establish an Faris Mahdi Alwan Ahmed Ali Mohammed	20
284 - 275	Poetry on the tongue of the other, a media vision. The poetry of Abu Marwan al-Jaziri (396 AH) is an example Sabreen Khalaf Hussein	21
297 - 285	Saudi-Japanese relations1938-1973(historical study Ali Joudah Sabih Al-Maliki Faraged Dawood Salman Al-Shallal	22
313 - 298	Influences on Al-Asma'i's Critical Judgment (A Critical Study) Hussam Kadhim Atiyah	23
334 - 314	The Effect of Felder and Silverman's Model in the Achievement of Fifth High School Female Students and Their Lateral Thinking in Mathematics. Shaymaa Kareem Hassoon	24
344 – 335	Enzymatic Activity of Fungi Isolated From the Bases of Stems and Roots of Faba Bean Plants Infected with Root Rot Disease Asia N Kadim Ali A Kasim Ghassan Mahdi Daghir	25
364 - 345	Alternative Means for Resolving Disputes Arising from Trading in the Securities Market (A Comparative study) Saja Majed Daoowd	26



...

ISSN (Print) 1994-697X
ISSN (Online) 2706-722X

DOI:

<https://doi.org/10.5463/3/2333-024-053-013>

Received:25/8/2024

Accepted:14/3/2025

Published online:31/3/2025



Validation and Development of UV spectroscopy method for the Estimation of Diclofenac sodium in Bulk and dos protected mode interface

Mohammed R . Abdul - Azeez - Misan Education

Email : mohammedriyadh322@gmail.com

<https://orcid.org/0009-0004-0676-7672>

ABSTRACT:

There are presently four direct, speedy, delicate, and exact UV spectroscopic methods accessible for assessing how much diclofenac sodium in drug dosage forms and bulk. A clear UV spectroscopic strategy was made and confirmed to gauge the centralization of Diclofenac sodium utilizing a 20:40 dissolvable combination of acetonitrile and ethanol. Diclofenac sodium was found to have a linearity scope of 2-12 μ g/ml with a location frequency of 276 nm. The ICH rules were utilized to approve the methodology. It is not difficult to utilize, delicate, trustworthy, and produces repeatable outcomes. so supportive for the ordinary assessment of diclofenac sodium.

Key Words: Diclofenac sodium, acetonitrile, methanol, linearity, validation Parameter

1.0 Introduction:

A subordinate of benzene-acidic corrosive is diclofenac sodium (diclofenac sodium intestinal covered tablets). For oral use, Voltaren comes as 75 mg light pink postponed discharge (intestinal covered) tablets. 2-[(2,6-dichlorophenyl) amino] benzene acidic corrosive, monosodium salt is the synthetic name. 318.14 is the sub-atomic weight. Its primary formula is as per the following, and its sub-atomic formula is $C_{14}H_{11}Cl_2NO_2$. (T. R. Bhardwaj 2022) It can likewise be utilized related to other circulatory strain drugs.

Voltaren contains the accompanying dormant fixings: lactose, magnesium stearate, hydroxypropyl methylcellulose, iron oxide, microcrystalline cellulose, polyethylene glycol, povidone, propylene glycol, sodium hydroxide, sodium starch glycolate, powder, and titanium dioxide. (El-Shafei RA 2016)

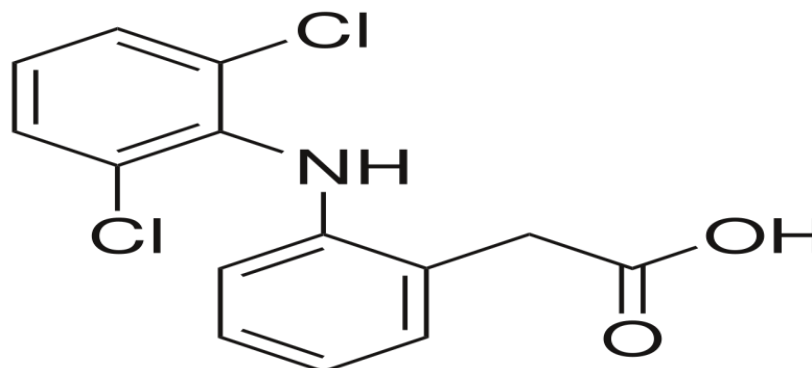


Figure 1 Diclofenac sodium $C_{14}H_{11}Cl_2NO_2$

Urine recovery indicates that oral delivery of diclofenac sodium results in 100% absorption as opposed to ingested administration. Nevertheless, only roughly 50% of the absorbed dosage is systemically accessible because of first-pass metabolism (Janićijević J, Krajišnik 2015). Food has no discernible impact on how much diclofenac is absorbed. In any case, there is ordinarily a 1 to 4.5-hour postpone in the beginning of retention and a decline in the pinnacle plasma levels of the essential objective of the examination is to make and approve an UV method to gain an exact, precise, and delicate quantitative estimation of diclofenac sodium. (Li L, Rossoni G 2006)

Diclofenac is utilized to ease pain related with gallstones, kidney stones, rheumatic diseases, dysmenorrhea, joint pain, and other incendiary problems (Boelsterli, U.A.(2003). Treating intense headaches is another sign. Diclofenac is habitually used to reduce gentle to direct pain following a medical procedure or injury, particularly related to irritation. (Brune, K. and J. Lindner.(1992)

Diclofenac has likewise been viewed as supportive for osteoarthritis, yet not so much for different forms of constant musculoskeletal pain. It is a topical medication. Additionally, actinic keratosis and acute pain from small sprains, contusions, and strains may benefit from the usage of diclofenac. (Hussain, I.M., Z. Khan 2008)

Eye drops are offered in a few nations to treat nonbacterial irritation of the front district of the eyes, both intense and persistent (e.g., postoperative conditions). (Aydin, G., A. Gökçimen) Traumatic corneal abrasion pain has also been treated using the eye drops. (Naidoo V, Duncan N, Bekker L2007)

Diclofenac is frequently used to treat cancer-related chronic pain, particularly when inflammation is present. Diclofenac gel usage shouldn't go beyond 32 g (32,000 mg) each day. (P. W. Elsinghorsta, M. Kinziga 2011)

The method involved with checking that the scientific procedure utilized for a specific test is suitable for its planned use is known as validation. Analytical results' consistency, quality, and dependability can all be assessed using technique validation results. It is a crucial component of all sound analytical procedures. (Ambrogi V., Perioli L 2011) Diclofenac sodium dissolves in one part ethanol to thirty parts. Many nations sell commercially available oral liquid forms of prednisolone, prednisolone sodium phosphate, and diclofenac sodium. Prednisone solutions have a pH of 2.6 to 3.6 and include 4-6% ethanol, while suspensions typically have a pH of 3 to 4.5 and contain 2 to 5% ethanol. Numerous techniques, including UV, colorimetry, and HPLC, have been developed to determine the dose form of diclofenac sodium. [Cassano R., Trombino S 2010] Particular guidelines for method validation for chemical evaluation have been released by the USP. Eight steps are defined by USP for validation: Specificity, precision, accuracy, quantitation limit, linearity and range, robustness, robustness, and robustness(Rao S.P. 2003)

Since the process of quality control is dynamic, some kind of validation or verification must go on until the approved procedure is being used. It shouldn't be the case that a method is designed and validated, then forgotten about. (Marco-Urrea E 2009)

The most common problems are related to the stomach. Diaclofenac medication must be stopped right away if ulceration and/or bleeding occur. During long-term treatment, most of patients are

regulated a gastro-defensive prescription as a preventive measure (misoprostol, ranitidine 150 mg at sleep time, or omeprazole 20 mg at sleep time. [Cheng G., An F 2004]

2.0 EXPERIMENTAL SECTION Materials and Methods:

Diclofenac sodium in bulk and pharmaceutical formulation in acetonitrile and methanol was created using a UV technique.

2.1 Reagents and chemicals:

Diclofenac sodium: Isolate medication.

Using ethanol and acetonitrile as diluents at a 20:40 ratio .

Making a standard stock solution with 1000 µg/ml of Diclofenac sodium:

Precisely weighing 100 mg of unadulterated prescription into a 100 ml volumetric jar, the stock arrangement of Diclofenac sodium was made by dissolving the medication in a 30:70 proportion of acetonitrile to methanol, yielding a centralization of 1 mg/ml.

Planning of working standard arrangement of Diclofenac sodium (100µg/ml):

Diclofenac sodium working arrangement was made by fittingly weakening the stock arrangement with methanol to accomplish a centralization of 100µ g/ml.

2.2 Instrument:

Using matching quartz cuvettes of one centimeter, all tests were conducted on a Perkin Elmer Lambda 850 UV-Visible Spectrophotometer.

Parameter fixation: Determination of λ_{max} :

At what wavelength does maximal absorption occur? This is known as an absorption maximum, or λ_{max} .

Diclofenac sodium's λ_{max} when diluted:

After diluting the Diclofenac sodium solution appropriately, it was tested to determine its λ_{max} . as shown in image 2.

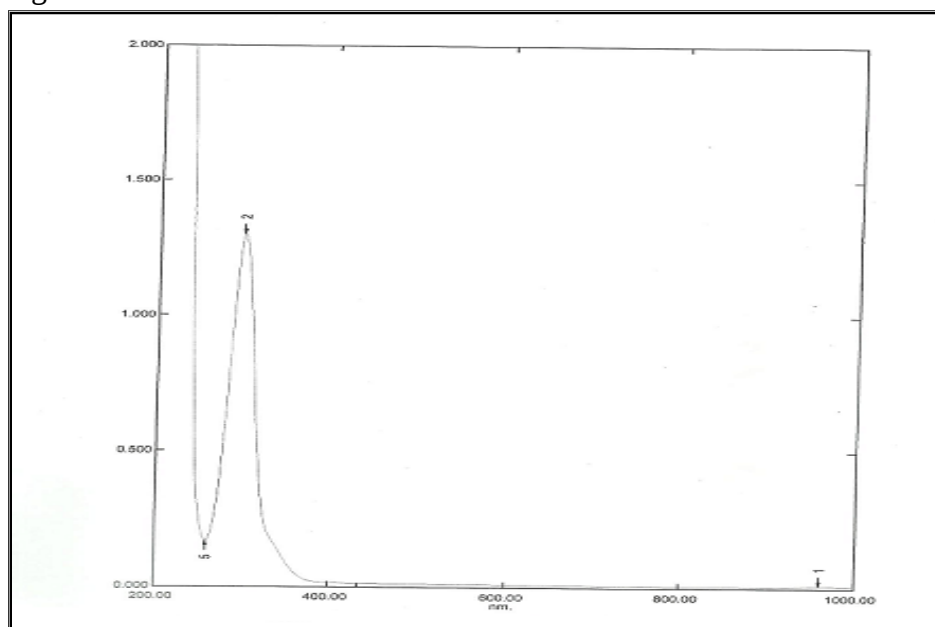


Figure (2) UV spectra of Diclofenac sodium

Stability of sample:

The medication arrangement test containing 3 μ g/ml was created by weakening with proper diluents, and absorbance estimations were made at 276 nm in contrast with a clear. It was discovered that the sample was stable for more than ten hours. As seen in Figure 3 and Table No. 1 that follow.

Table 1: stability of sample

Absorbance at 276 nm	Time (min)	Concentration of drug solution (mg/L)	Sr. No.
0.1	0	3	1
0.2	30	3	2
0.3	60	3	3
0.4	90	3	4
0.5	120	3	5
0.6	240	3	6
0.7	360	3	7
0.8	480	3	8
0.9	600	3	9

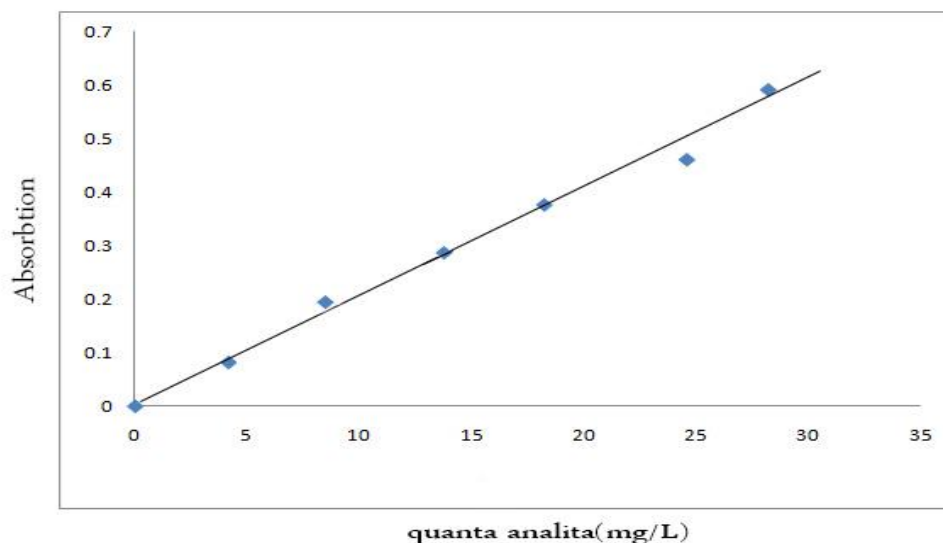


Figure 3: stability of sample

Linearity of samples:

Utilizing the functioning norm, six particular 10 ml volumetric jars containing 0.4, 0.6, 0.8, 1, 1.2, and 1.4 ml of medication arrangement were filled to the proper level utilizing a 30:70 acetonitrile: methanol blend. The absorbance of each example was then estimated at 276 nm against the relating reagent clear, and the outcomes are displayed in Table No. 2 and Figure No. 4. The prescription's straight reaction inside the scope of 2-12 μ g/ml of the concentration.

Table 2: Beer's law-compliant absorbance of various concentrations of Diclofenac sodium

Absorbance At 276 nm	Concentration Range (mg/L) in 10 ml	Concentration of drug taken (100 mg/L)	Sr. No
0.172	4 μ g	0.4 ml	1
0.27	6 μ g	0.6 ml	2
0.342	8 μ g	0.8 ml	3
0.439	10 μ g	1 ml	4
0.536	12 μ g	1.2 ml	5
0.638	14 μ g	1.4 ml	6

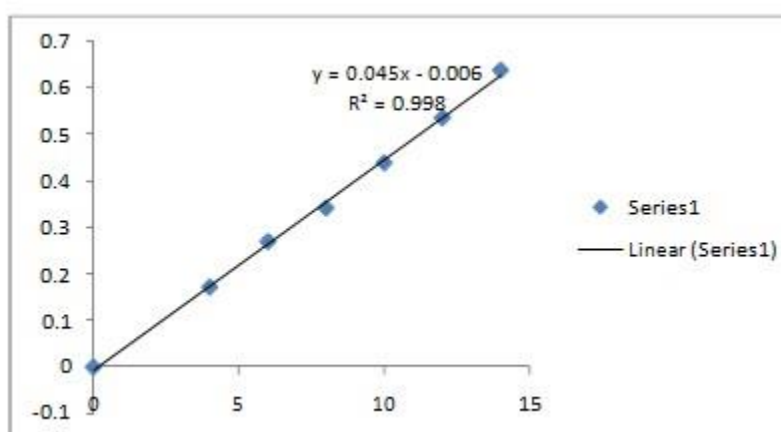


Figure 4: sample's linearity

Analysis of formulation:

Wyeth Limited of Verna, Goa, India, produced the 5-milligram tablets of diclofenac sodium that were purchased from the local market and sold under the brand name WYSOLONE 5.

Preparation of solution:

A mortar and pestle were utilized to gauge and pound twenty pills precisely. Subsequent to gauging the powder to determine its identical load of 100 mg, it was moved to a 100 ml volumetric cup and broke down in a combination of acetonitrile and methanol in a 20:40 proportion. The combination was then sifted through Whatmann channel paper into one more 100 ml volumetric carafe and leaving up to imprint utilizing similar diluents, yielding an answer of 1 mg/ml conc. Extra weakening was then completed to get a centralization of 100 μ g/ml. Table 3 contains the level of diclofenac sodium.

Table 3: Assay Findings for Sold Formulation

% Diclofenac sodium	Amount obtained of Diclofenac sodium (mg/L)	Actual concentration of Diclofenac sodium (mg/L)	Formulation
96 %	5.9	4	Tablet

3.0 Validation parameter:

3.1 Linearity:

It is important to assess a linear relationship throughout the analytical process. By diluting a normal stock solution, it was proven directly on the medication material while utilizing the suggested approach. The brew lambert regulation is trailed by this methodology in the fixation scope of 4-12 μ g/ml. as indicated by table no. 2.

3.2 Accuracy:

Throughout the designated range of the analytical process, accuracy was proven. The proportion of precision is the manner by which intently the test discoveries delivered by the strategy match the real worth. Twenty tablets were weighed, pulverized, and analyzed in order to investigate the accuracy. In order to conduct recovery tests, standard drugs were introduced to the sample at three different concentration levels while accounting for the bulk drug samples' percentage purity. Table 4 presents the accuracy determination results.

Table 4: Assessment of Accuracy

% Recovery Diclofenac sodium %	Amt. of drug recovered Diclofenac sodium mg/L	Amt. of drug added Diclofenac sodium mg/L	Amt of sample Diclofenac sodium mg/L
-	9.91	0	10
99.8	3.99	4	10
99.3	5.93	6	10
99.13	7.87	8	10

3.3 Repeatability:

Diclofenac sodium standard arrangements (4, 6, 8, 10, 12, and 14 μ g/ml) were made, and a spectra was recorded. At 276 nm, the combination of water and ammonium molybdate was utilized as the clear to gauge absorbance. Six estimations of a similar focus arrangement's absorbance were made, and the RSD was processed. Tables 5 and 6 contain repeatability data for Diclofenac sodium and a sample of Diclofenac sodium.

Table 5: Data on Diclofenac sodium's repeatability at 278 nm

12 mg/L	10mg/L	8mg/L	6mg/L	4mg/L	2mg/L	Concentration
0.638	0.536	0.439	0.342	0.27	0.172	Absorption
0.637	0.538	0.438	0.34	0.27	0.17	
0.638	0.544	0.435	0.342	0.273	0.17	
0.639	0.543	0.436	0.344	0.273	0.172	
0.635	0.534	0.435	0.345	0.269	0.173	
0.639	0.537	0.439	0.336	0.274	0.169	
0.637	0.538	0.437	0.341	0.271	0.171	Mean.
0.001506	0.003983	0.001897	0.003209	0.002074	0.001549	Std. Dev.
0.0023	0.0074	0.0043	0.0094	0.0076	0.0090	Coefficient
0.23	0.74	0.43	0.94	0.76	0.90	% RSD

n = 4 determination

Table 6: Repeatability of Diclofenac sodium sample application data

Diclofenac sodium 5 mg/L	Concentration
0.224	Absorption
0.221	
0.220	
0.221	
0.222	
0.224	
0.222	Mean.
0.001673	Std. Dev.
0.0075	Coefficient variation
0.75	% RSD

n = 4 determinations

3.4 Limit of detection (LOD) & limit of quantitation (LOQ):

Standard deviation and slop were utilized to compute the medication's furthest reaches of recognition and quantitation. Table 7 portrays its worth.

$$LOD = \frac{3\sigma}{S}$$

$$LOQ = \frac{10\sigma}{S}$$

σ = standard deviation

s= slope of the calibration curve

Table 7: LOD AND LOQ

LOQ	LOD
0.48	0.12

3.5 Specificity and selectivity:

Table 8 indicates the specific and selective nature of diclofenac sodium.

Table 8: Study of Selectivity and Specificity

Diclofenac sodium	Study
Specific	Specificity
Selective	Selectivity

3.6 Reproducibility:

To evaluate reproducibility, an interlaboratory trial is used. Another spectrophotometer was used to measure the absorbance readings at 276 nm in a different lab, and the results were analyzed using the t-test to confirm their Table 9 contains the reproducibility information for Diclofenac sodium at 276 nm.

Table 9: Diclofenac sodium reproducibility data at 276 nm

Inference	Result of t test*	Instrument 2 JASCO	Instrument 1 SIMADZU
Not significant difference	0.98	0.171 ± 0.001648	0.170 ± 0.001550

* At 96 % confidence interval

3.7 Intra and inter day precision:

Variations in the results between days (inter-day) and within the day (intraday) were examined. Diclofenac sodium was analyzed three times at 276 nm on the same day to assess the intraday precision. By testing the medication at 276 nm on three separate days, the interday precision was ascertained. Table 10 provides precision values for prednisolone at 276 nm.

Table 10: Diclofenac sodium precision measurements at 276 nm

% RSD	CV	Intraday (n=3)	Conc. mg/L
0.91	0.0091	0.170 ± 0.001550	10
0.76	0.0076	0.271 ± 0.002074	20
0.94	0.0094	0.341 ± 0.003209	30

% RSD	CV	Inter day (n=3)	Conc. m g/L
0.89	0.0089	0.169 ± 0.001520	10
0.69	0.0069	0.269 ± 0.001870	20
0.91	0.0091	0.340 ± 0.003100	30

An ultraviolet spectroscopic approach was used in the procedure to estimate the amount of Diclofenac sodium. The technique's wavelength of detection was 276 nm, and it followed Beer-Lambert's law in the concentration range of 2–12 μ g/ml. Ultimately, research on recovery was started. Table 11 lists the quantitative factors used to determine the amount of diclofenac sodium in a pharmaceutical dosage form.

Table 11: The numerical parameters used to calculate the sodium diclofenac content

Result	Parameter
276.0	$\lambda_{\max}$ (nm)
2-12	Beer's law limits (m g/L)
4.366×10^4	Molar absorptivity
$Y = 0.044 + -0.0065$	Regression equation ($y = bc + a$) Slope (b)
0.044	Intercept (a)
0.998	Correlation coefficient (r)
0.66	Relative standard deviation (%)
4	n

4.0 CONCLUSION:

The suggested approach is straightforward, sensitive, and selective. The acquired statistical parameters for prednisolone measurement by the suggested UV spectrophotometry approach are straightforward, precise, quick, and accurate. The accuracy and linearity of the procedure were

satisfactory. Because of its excellent sensitivity, the suggested method might be used with ease to the routine examination of pure medications and their container forms.

REFERENCES:

- [1] T. R. Bhardwaj, M. Kanwar, R. Lal, and A. Gupta, vol. 26, no. 10, pp. 1025–1038, (2022). DOI: [10.1081/DDC-100100266](https://doi.org/10.1081/DDC-100100266)
- [2] El-Shafei RA, Saleh RM. Pharmacological effects of vitamin C & E on diclofenac sodium intoxicated rats. Biomedicine & Pharmacotherapy. 2016; DOI: [10.1016/j.biopha.2016.09.005](https://doi.org/10.1016/j.biopha.2016.09.005)
- [3] Janićijević J, Krajišnik D, Čalija B, Vasiljević BN, Dobričić V, Daković A, et al. Modified local diatomite as potential functional drug carrier—A model study for diclofenac sodium. International Journal of Pharmaceutics. 2015; 496(2):466–74. DOI: [10.1016/j.ijpharm.2015.10.047](https://doi.org/10.1016/j.ijpharm.2015.10.047)
- [4] Li L, Rossoni G, Sparatore A, Lee LC, Del Soldato P, Moore PK. Anti-inflammatory and gastrointestinal effects of a novel diclofenac derivative. Free Radical Biology and Medicine. 2007; 42(5):706–19. DOI: [10.1016/j.freeradbiomed.2006.12.011](https://doi.org/10.1016/j.freeradbiomed.2006.12.011)
- [5] Boelsterli, U.A.(2003). Diclofenac-induced liver injury: a paradigm of idiosyncratic drug toxicity. Toxicology and Applied Pharmacology. 192: 307-322. DOI: [10.1016/s0041-008x\(03\)00368-5](https://doi.org/10.1016/s0041-008x(03)00368-5)
- [6] Brune, K. and J. Lindner.(1992). Side effects of anti- inflammatory drugs. In: Inflammation and Drug Therapy Series. 5: 198-203. DOI: [10.18433/j3vw2f](https://doi.org/10.18433/j3vw2f)
- [7] Hussain, I.M., Z. Khan, A. Khan, I. Javed and M. K. 1 Saleemi.(2008) .Toxicological effects of diclofenac in four avian species. Avian Pathology.37(3): 315-321. DOI: [10.1080/03079450802056439](https://doi.org/10.1080/03079450802056439)
- [8] Aydin, G., A. Gökçimen, M. Öncü, E. Çlçek, N. Karahan and O. Gölkalp. (2003).Histopathologic changes in liver and renal tissues induced by different doses of diclofenac Sodium in rats Turkish Journal of Veterinary and Animal Sciences.27: 1131-1140 DOI: <https://doi.org/10.15218/zjms.2020.028>
- [9] Naidoo V, Duncan N, Bekker L. Validating the domestic fowl as a model to investigate the pathophysiology of diclofenac in Gyps vultures. Environ Toxicol Pharmacol. 2007;24(3):260-266. DOI: [10.1016/j.etap.2007.06.003](https://doi.org/10.1016/j.etap.2007.06.003)
- [10] P. W. Elsinghorsta, M. Kinziga, M. Rodamera, U. Holzgrabe and F. Sorgela, "An LC– MS/MS Procedure for the Quantification of Naproxen in Human Plasma: Development, Validation, Comparison with Other Methods, and Application to a Pharmacokinetic Study", J. Chromatogr B (2011), 879:1686-96. DOI:[10.1016/j.jchromb.2011.04.012](https://doi.org/10.1016/j.jchromb.2011.04.012)
- [11] Ambrogi V., Perioli L., Ricci M., Pulcini L., Nocchetti M., Giovagnoli S. and Rossi C. 2008. Eudragit and hydrotalcite-like anionic clay composite system for diclofenac delivery, Microporous and Mesoporous Materials, 115: 405-415. <https://doi.org/10.1016/j.micromeso.2008.02.014>
- [12] Cassano R., Trombino S., Ferrarelli T., Barone E., Arena V., Mancuso C. and Picci N. 2010. Synthesis, characterization, and anti-Inflammatory activity of diclofenac-bound cotton fibers, Journal of American Chemical Society, 11: 1716-1720. DOI: [10.1021/bm100404q](https://doi.org/10.1021/bm100404q)
- [13] Rao S.P. 2003. Capping drug: Development of Prodrug, 8: 19-27 DOI:[10.1007/BF02835647](https://doi.org/10.1007/BF02835647)
- [14] Marco-Urrea E., Pérez-Trujillo M., Cruz-Moratúa C., Caminalc G. and Vicenta T. 2010. Degradation of the drug sodium diclofenac by Trametes Versicolor pellets and identification of some intermediates by NMR, Journal of Hazardous Materials, 176: 836–842. DOI: [10.1016/j.jhazmat.2009.11.112](https://doi.org/10.1016/j.jhazmat.2009.11.112)
- [15] Cheng G., An F., Zou M.-J., Sun J., Hao X.,-X. and He Y. 2004. Time- and pH-dependent colonspecific drug delivery for orally administered diclofenac sodium and 5-aminosalicylic acid, World Journal of Gastroenterology, 10: 1769-1774. doi: [10.3748/wjg](https://doi.org/10.3748/wjg)

Conflicts of Interest Statement.....

Manuscript title:

Validation and Development of UV spectroscopy method for the Estimation of Diclofenac sodium in Bulk and dos protected mode interface

The authors whose names are listed immediately below certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

Author names:

Mohammed R . Abdul - Azeez

Maysan Education

The authors whose names are listed immediately below report the following details of affiliation or involvement in an organization or entity with a financial or non-financial interest in the subject matter or materials discussed in this manuscript. Please specify the nature of the conflict on a separate sheet of paper if the space below is inadequate.

This statement is signed by all the authors to indicate agreement that the above information is true and correct (a photocopy of this form may be used if there are more than 10 authors):

Author's name (typed)

Author's signature

Date

Mohammed R . Abdul – Azeez

mohammed

20/3/2025