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# A Review on Analytical and Pharmacological Description of Ornidazole

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**ABSTRACT**

Ornidazole is a well-known Anti-bacterial drug associated with the Nitroimidazole class. It's a class II BCS compound with poor solubility in inorganic solvents. Hoffmann-La-Roche synthesized orinidazole in 1966. Anaerobic bacteria are susceptible to the antibacterial and antiprotozoal effect of ornidazole. This review mainly focuses on various analytical estimations techniques of ornidazole and compares it with other drug compounds. This is a comprehensive review of previous research on the drug ornidazole.

***Keywords:*** *Ornidazole, Nitroimidazole, RP-HPLC, Anaerobic bacteria.*

## 1. INTRODUCTION

Chemical structural formula of Ornidazole is known as (C7H10ClN3O3), it is a member of Nitro-Imidazole category of drug. Moreover, ornidazole carry out the treatment of giardiasis, trichomoniasis which is a part of uro-genital tract, severe intestinal and hepatic amoebiasis, and bacterial vaginosis. The pka value is 2.4 & appearance is white to slight yellow crystal-clear powder.1-3 Ornidazole can be injected intravenously, vaginally, or orally in the form of tablets that are taken after meals. Ornidazole have combinations with metronidazole, tinidazole, secnidazole, ofloxacin, miconazole. Different Spectrophotometric and HPLC methods are used to report the Ornidazole presence in pharmaceutical formulation and bulk. Ornidazole disrupts the microbe's growth and acts as a bacterial metabolism electron acceptor. Ornidazole breaks the DNA helical structure that prevents the generation of proteins and eventually results in the death of the bacteria.[36].

### Analytical method description

We create, establish, and validate the test procedures in accordance with the various stages of drug discovery through a series of operations known as analytical development.3 The processes start in Early drug development, but as the project develops these moves to full commercial production. The analytical approach aims at outlining a strategy to ensure the design aspects of any given drug product, like its potency, identity, or purity, as well as development of the drug product's characterization and composition attributes by going through analytical development processes that define critical quality attributes of the drug or medication. There are testing procedures that one can choose from and that can be proved to satisfy the legal requirements, thereby being used at any stage of the process.15

### Evaluation of ornidazole in therapeutic preparation via using validated reverse phase hplc method

The development for new quality control methods using HPLC enables the evaluation of Ornidazole in tablet formulations, using an assay that is simple, fast, precise, accurate, and specific. Tinidazole is picked to work as inherent benchmark. The separation of the composition on X-Terra column by the Waters Corp., Milford, MA, RP- 18 column was carried out, which contains the mobility phase contains water: acetonitrile in proportion of 70: 30; vol/vol, pH modified to 3 by the use of 10mm ortho-phosphoric acid, the rate flow set by pump is 1.0 ml/min. The approach was verified according to guidelines of ICH.2-3

### The advancement & verfication of reverse phase-hplc & spectrophotometry study of the concurrent evaluation for

**the ornidazole & levo-floxacin.**

Levofloxacin & Ornidazole as the form of tablets were estimated using developed & validated liquid chromatographic assay method and an accurate, precise, and repeatable UV-spectrophotometric approach. 50% methanol was used as the solvent and the simultaneous equation approach was used for spectrophotometric estimation. The chosen λmax for LEVO and OZ using this approach were 293.5 nm and 318 nm. The Reverse phase HPLC study has been done by the use of column - Prontosil C-18 (4.6 x 250mm, 5-micron atom number) and a mobility medium that contains Water:ACN (55:45% v/v) with modified 3pH by use of (0.05%) O-phosphoric acid. The chromatogram was recorded at 303nm and the amount of movement fixed on 1.0 ml/min. In both UV-Spectrophotometry and Reverse-phase hplc study, linearity was evaluated towards to LEVO and OZ concentration vary from 4 to20 µg/ml & 8 to40 µg/ml. (the result of r2 is 0.999 for levofloxacin and ornidazole). The validation is done with accordance to ICH standards, the result of precision, accuracy and other statistical analysis of these methods were found to be satisfied.4-5

**By the use of hptlc, a new rational technique evolution & verification of ornidazole & ciprofloxacin in human plasma.**

It sought devise an easier, quicker, more effective, selective, and low-cost hptlc technique could be used quantitatively as a routine procedure for calculation of ciprofloxacin and OZ in plasma of human by using Tindamax as an intrinsic measure. This approach include extraction by the use of Formic acid: Methanol (0.5:5.5 v/v) and then applying measured quantity of the obtained matter onto a silica gel 60 F-254 plate contains pre applied coat employing Camag-Lino-Mat 5th automatic sampler. The calibration curve had concentrations of the drug between 100 to 700 ng/spot. The mean percentage recoveries of Oz and ciprofloxacin were in the ranges of 86.26% to 81.02% and 82.16% to 79.73% accordingly. Mobile phase is composed with methanol, chloroform & tri-ethylamine in the ratio of (0.8:9:0.4 vol/vol/vol) accordingly. Wavelength used for densitometric analysis was 291 nm. For ciprofloxacin, ornidazole, and tinidazole, the corresponding Rf values were 0.18 ± 0.057, 0.49 ± 0.0.0057, and 0.75 ± 0.0054. Ciprofloxacin and Oz were shown to be stable in plasma after being subjected to a post-preparatory stability study, three freeze-thaw cycles (-20 degrees), and a twelve-hour bench test. To validate the proposed technique, ornidazole and ciprofloxacin drug concentration levels in human plasma were determined in recovery studies where the mean plasma levels were statistically calculated.6-7

**The estimation and verfication by reverse phase-hplc in bulk pharmaceutical formulation of ornidazole by using an economical, environment-friendly hydrotropic solution as the mobile phase**

A unique Reverse phase-HPLC method has been evolved to determine the weakly water-solvable drug oz, which is safe, economical, and environmentally benign. Mostly organic solvents that being used as an mobile phase in RP-HPLC analysis is toxic, unstable, and costly. To assess the weakened aqueous soluble medication ornidazole using Reverse phase-HPLC, the current work used a cost-effective and ecologically friendly hydrotropic solution that contains 5% urea contains hplc quality water as both mobility medium & dissolving compound. We used a Shimadzu LC6AD dual pump contains SPD-M20A Rheodyne-injection 20micro-litre loop and PDA detector. Shimadzu Shim Pack C, with count of 4.6 x 250 mm and having a particle dimension of 5micro-meter, was implemented. Drug has been detected on 320 nm at room temperature using a solution contains urea (5%) with the rate of flow 1ml per minute as the mobility medium. With the retention time 3.996 minutes, it has been found out the novel eco-favored mobility medium, which composed of 5% urea blend, was sufficient and generated a prominent peak for ornidazole. Regression results y=49321×+33223 expressed linearity with concentration limit of 10 to 50µg/milliliter (R2=0.9990). The suggested method's accuracy is demonstrated by the 99.36 percent recovery rate for ornidazole. The great extent of correctness with fact that the percentage RSD of tablet evaluation and retrieval investigations was lower than 2-percent. 0.015771 microgram/ml and 0.047793 microgram/ml, respectively, for the LOD & LOQ values demonstrated the sensitivity of the suggested approach. The evolved method, which used hydrotropic compound as the mobility medium, a novel, simple, precise, affordable, secure, and eco-friendly. It's used to perform analysis of ornidazole in the pharmaceutical dosage & bulk on regular basis.8-10

**Establishment & verifcation of the reverse phase-hplc study for concurrent evaluation for ornidazole & ofloxacin tablets**

A hplc method is easy for use, sensitive, and quite affordable has been developed to evaluate simultaneously ofloxacin with ornidazole drug preparations.14 Chromatography dissociation was reached with 250mm x 4.6mm internal diameter, 10 µm BDS-C18-Hypersil column. Orthophosphoric acid has been taken to lower the pH to 3.0.14–15. The mobile phase was made up of 80% water and 20% ACN with 0.55ml/L triethylamine added as the peak enhancer. 284 nm was the wavelength of detection. The correlation values for ofloxacin and ornidazole were 0.9998 and 0.9995 separately, and the reaction is straight-line program of concentration at ranges of 1–20microgram/ml and 2.5–50 microgram/ml. The quantification limits of ofloxacin & ornidazole were 0.05 & 0.1microgram/ml, while the identification values were 0.01 and 0.02 microgram/ml. Accuracy outcome of oz & ofloxacin on 80%, 100% & 120% are 99.6 to 100.9%. Inter & Intra-day precision value has been recorded (<1%). The elution time for both the compounds was <9 mins. 11-12

**Developing and verifying an analytical study of evaluation for cefixime trihydrate & ornidazole as solid medication preparation with the use of the uv spectroscopy**

Determining the Cefixime and Oz in pharmaceutical solid dosage formulations and bulk, the straightforward, correct, & cost-effective simultaneous spectrophotometric approach has been developed. Optimal circumstances for the drug's analysis have been noted. Linearity was achieved for Cefixime and Ornidazole at concentration value is 2–20microgram/ml and 5–30microgram/ml, respectively. Drug as tablet formulation have been successfully analyzed using the Simultaneous UV method. The tablet analysis results, which varied from 99.57 to 100.2% for ornidazole and 99.25 to 100.8% for cefixime, showed that the procedure was reproducible. The accuracy and repeatability of the Simultaneous UV method were demonstrated by the 100.3% recovery rates for both medications. For Cefixime and Ornidazole, the Ruggedness Interday variation results are 99.85 & 100.25. The mean of Ruggedness Intraday Variation for Cefixime & Ornidazole is 100.18 & 100.2 respectively.16-17

**Spectrophotometric method for determination of ornidazole**

Ornidazole can be determined in both bulk and solid dosage form by two simple, reliable, and precise spectrophotometric techniques that has been established and verified. The two techniques on the basis of Schiff bases of reduced ornidazole formed by its reaction with trimethoxy benzaldehyde and para-methylamino benzaldehyde having maximum absorbance at 385nm & 505nm. With the earlier method, linearity was obtained between 5–50 µg/mL & 16–40 µg/mL .18-19

**Concurrent evaluation and verification of cefixime & ornidazole in pure drug formulation by hptlc method**

Oz and cefixime in uncontaminated, therapeutic formation can be evaluated concurrently with a straightforward, fast, sensitized, hptlc approach that was evolved and verified. It was carried out on a TLC plate that has been with silica gel 60F254 contains pre-applied coat in static medium, using a mobility medium composed with meoh & water in a 60:40 vol/vol ratio. At, 254 nm the wavelength detection was performed using the absorption/reflectance approach, yielding range of rf is 1.15 for cefixime and 0.95 for ornidazole. As per the estimates marketed pills of ornidazole and cefixime include purity claims of 99.06% & 99.48% by height and 99.39% & 99.51% by area separately. The accuracy, precision, specificity, and robustness of the approach were all validated. Linearity was observed within 250 & 2500 µg/mL for ornidazole and between 100 & 900 µg/mL for cefixime. By using the addition procedure, the recoveries for both medications varied from 98 to 98.4. For regular examination of cefixime and ornidazole pills, the suggested method is accurate, exact, and appropriate. 20

**Evaluation of ornidazole & gatifloxacin in the form of tablets by the use of reverse-phase-high performance liquid chromatography study**

Concurrent evaluation of gatifloxacin and ornidazole in mass & tablet preparations, proposed approach is simple, reliable, exact, specific, and prompt. The mobile phase was prepared using an isocratic column, combining equal parts (50:50 v/v) of 0.025 M potassium dihydrogen phosphate buffer and 0.5% (v/v) triethylamine. The pH was then carefully adjusted to 3.0 with glacial acetic acid. UV-identification was performed at 300nm, and rate of movement was set at 1.0 millilitre/min. The holding time of gatifloxacin and oz was 2.89±0.017 & 4.21±0.022 minutes, separately. The linear ranges for ornidazole and gatifloxacin was get 5–60 microgram/ml and 2–24 microgram/ml, individually. For dissolution studies, the evolved hplc study has been stretched. Using paddle method, dis-solution test was carried out between 50 & 100 round per min with 0.1N hydrochloric acid as the support of dissolving.21-22

**Implementation of an hydrotropic solubilizing technique for the concurrent evaluation and verification of ornidazole & ofloxacin in the form of tablets**

Many organic solvents are used to dissolve poorly water-soluble drugs for spectrophotometric measurements. Some common ones include Me-oh, chloroform, alcohol, dimethylformamide, ACN, hexane, acetone, and ccl4. However, these solvents present problems that include being expensive, toxic, and volatile. Under some circumstances, these factors may give unsatisfactory readings in the analysis. To address these concerns, three clear, specific, and highly precise optical measurement techniques was established for together evaluation of-loxacin and oz in a solid medication preparation. A Water-based solution of 2.0 M sodium benzoate has been used as solubilizing agent in this technique, which is non-toxic and environmental-friendly besides being eco-nomic. The solubility of these two drugs in the 2-M sodium-benzoate blend was improved in comparison with their respective solubilizing power in water only. For example, the solubility was increased by 5 times for ofloxacin and 11 times for ornidazole. Sodium benzoate and the excipients in the tablets did not affect the analysis, since sodium benzoate does not absorb light at wavelengths greater than 300 nm. The quantitative measurements were carried out using three different spectrophotometric methods: the first method utilizes the first derivative of the spectrum, the second relies on the area under the curve, and the third method involves multi-component analysis. From the three approaches it has clearly illustrated that the tested drugs based on the Beer's Law. Analytical methods validated, by ICH guidelines. Methods have been adopted here for validation; thus, making the proposed techniques valid for further routine analysis in dosage forms as tablet for Ofloxacin and Ornidazole.23-25

**Stability expressed by developing and validation of seperation method for the evaluation of ornidazole & miconazole via hplc study**

An easy, trustable, and specific HPLC strength-assessing assay study was evolve & verify evaluation for the miconazole & ornidazole in their drug formulation. Good partition was accomplished by C18 (250mm × 4.6mm) internal diameter., 5 micro-meter substance, C-18 RP-column with variable function, & mobility medium. Conditions: Water: ACN: Acetic acid (30:70:0.1%vol/vol), 1 ml/min is the rate of flow, 20 microlitre inject capacity, & 224 nm value of UV-detection. This method shows considerable linearity for accumulation limit is the 10-30microgram/mL (r = 0.999) of Miconazole & 2-6microgram/mL (r =0.999) of Oz. Range of detection (LOD) was discovered as 0.089 microgram/ml of Miconazole & 0.457 microgram/ml of Ornidazole. Meanwhile (LOQ) was 0.270 µg/mL for Miconazole & 1.386microgram/mL for Ornidazole. Forced degradation analysis was performed according to ICH standards, with various situations like acid-base hydrolysis, oxidative & thermal degradation with photo-degradation study.26-29

**Evaluation of ornidazole & doxycycline- monohydrate synthetic combination by the use of uv- spectrophotometery method**

For the concurrent determination for the Doxycycline-monohydrate & Ornidazole in mass and artificial mixtures, a basic, reliable, fast, and precise spectrophotometric approach has been established. This technique was based on the simultaneous equation method for UV spectrophotometric determination of two medicines. For the study in methanol, λmax is 270 nm for doxycycline and 310.6 nm for ornidazole. Concentration limit is 4-36 microgram/ml of the ornidazole & 4-36 microgram/ml for doxycycline showed linearity. The percentage RSD below 2, the technique demonstrated good reproducibility and recovery. Rapid, specific, précised, and accurate method have been observed, which may be used for regular assessment of Doxycycline and Oz in mass quantity & combination dose form without excipient interference. The procedure was according to the ICH guidelines.37-38

**A novel analytical study for the quantification evaluation for ornidazole in mass & different drug formulations using hydrotropic solubilization technique**

There are currently very few analytical techniques that use the hydrotropic solubilization methodology to conduct quantifiable assessment of oz in mass quantity and dose formulation, according to a comprehensive review of the literature. The current study describes a novel analytical technique based on the hydrotropic principle that uses a readily accessible chemical, 1M sodium benzoate solution. The procedure has been verified in agreement to ICH standards and is deemed compliant with them. Because of their high cost, volatility, and toxicity, organic solvents have not been used in this experiment, making the approach environmentally benign. The results showed that the approach is novel, easy to use, safe, ecologically safe, exact, correct, repeatable, & economical. This will be used effectively like a standard analytical method toward to Ornidazole tablet assessment. Therefore, the authors propose that the pharmaceutical sector can use this analytical technique to analyse Ornidazole in bulk and different dose forms. Lambert-beer law has been followed for the conc-limit which is 2–5 microgram/ml in the presence of 1 Mol sodium-benzoate, and molar absorbance were calculated to be 6.5934 × $10^{-3}$ $mol^{-1} \cdot cm^{-1}$. Ornidazole exhibits its maximum absorbance at 304 nm. It was determined that Sandell's sensitivity was 0.0167 microgram/cm2/0.001 abs.unit. Using the Ringbom's plot, the ideal photometric range was determined. After computation, the standard deviation and correlation coefficient—two statistical analytical parameters—were determined to be 1.581 and 0.996, respectively.30-31

**Development and verification of reverse phase-hplc study for the evaluation of ornidazole in the 5mg/ml injection of ornidazole**

For the estimation of ornidazole in injection formulations, a novel isocratic rp-hplc assessment method was evolved that is quick, easy, selective, accurate, and exact. Column Inertsil ODS-3V (150×4.6mm, 5µ) has been used to accomplish the partition. The mobility phase contained ACN & phosphate buffer of pH-3, which were brought to the use of diluted O-phosphoric acid with proportion 10:90, v/v. The rate of flow is 2 ml/min, & a detector of UV fixed at 300nm wavelength was used to detect the separated ornidazole. 25°C is the column temperature, 20 microlitre is the injection volume, and the sample temperature is ambient. Ornidazole was shown to have a retention time of 12.05 minutes. The procedure was verified in accordance with ICH regulations.39-42

**Concurrent evaluation of ornidazole in ornidazole impurity & ofloxacin in combined drug formulation by development and verification of an reverse phase-hplc method**

For the simultaneous determination of Oz and ofloxacin and Ornidazole (impure form) in combination. Easy, quick, correct, and specific Reverse phase-HPLC method was evolved.14 Using UV detection at 318 nm, utilized C-18 (250mm x 4.6mm, 5µm) Phenomenex with the rate of flow 1 millilitre/minutes. ACN: Phosphate buffer with pH 3, modified with the use of Ortho-phosphoric acid taken as in 40-60 v/v ratio; it is utilized as the mobility phase to conduct the chromatographic partition. With correlation coefficient - ($R^2$ 0.999), Linearity was seen across a concentration value of 2–20 microgram/millilitre for Ofloxacin, 5–50 microgram/millilitre for Ornidazole, & 0.5-2 microgram/millilitre for Impurity after the method was verified. Within five minutes, every component was properly solved. The suggested approach can be successfully used to determine the presence of Oz, Ofloxacin, & Ornidazole-Impurity in the pharmaceutical dosage forms & bulk as well as during routine purity testing.32-35

**Spectroscopic determination & verification of ornidazole in bulk & pharmaceutical formulations**

An easy, sensitive, and accurate visible spectroscopy technique was evolved for quantitative verification of ornidazole in pharmaceutical preparation & bulk. The study were primarily depended on the fact that potassium dichromate forms a green colour chromogen in an acidic solution. The generated colour was measured against reagent blank at a maximum wavelength of 570 nanometre. Proposed study was found to be linear in the concentration value of 1–5 microgram/millilitre. The linearity, accuracy, and precision of the developed study was validated statically as per FDA requirements.43-44

**Development of an enhanced rp-hplc method for quantifying norfloxacin & ornidazole in combination pharmaceutical forms**

A new, faster, and better approach was developed and validated for the estimation of norfloxacin and ornidazole in their combination dosage form.13 The current approach has the advantage of having a faster elution time than the previous one. The eluent phase made up of 50 mM sodium dihydrogen phosphate buffer:ACN:MeOH at pH 2.5 adjusted by orthophosphoric acid, 15:70:15%v/v at the flow rate of 1 ml/min and at a run period of 10 minutes. The column selected was PRONTOSIL AQ ODS, 250×4.6 mm (5 mm). The separations were performed using isocratic elution at 294 nm. The technique was found to be linear in the range of 4–20 µg/ml of norfloxacin and 5–25 µg/ml of ornidazole. With recovery percentages of 99.06%-101.74% for NOR and 99.36%-101.11% for ORN, respectively, the approach was accurate. With the CV of 0.46-0.72 for intraday (n=3) and CV of 0.67-1.43 for interday (n=3) for NOR and the CV of 0.45-0.79 for intraday (n=3) and CV of 0.63-0.77 for interday (n=3) for ORN, accordingly, the method was considered to be precise. It was found that value of detection for ORN 0.649 (microgram/millilitre) and that for NOR was 0.366 (microgram/millilitre). Since there is no interference when medications were calculated with excipients present, the approach was also determined to be specific. Following validation, the approach was successfully used to estimate the combination dosage form of ornidazole and norfloxacin.35,56

**Spectrophotometric analysis of ornidazole in pure & pharmaceutical formulations**

This aim is the design and assessment of a relatively easy ion-pair spectrophotometric extraction procedure which should be simple to perform, precise, and sensitive to carry out ornidazole tablets and pure pharmaceutical dosage analysis. Reduction of ornidazole and interaction with orcinol form yellow ornidazole-orcinol complex forming the basis for this method. At a λ max of 420 nm, the coloured complex obeyed Beer's law in the concentration value of 10–60 microgram/millilitre. The proposed method was validated following the ICH Q2 guidelines.48 The retrieval trials validated the accuracy and precision of the method. For routine analysis of Ornidazole in pharmaceutical dosage forms and bulk, the above approach proved to be a rapid instrument.45-46

**Establishment of an rp-hplc study for quantitative analysis of ofloxacin & ornidazole in combined liquid oral formulations**

A straightforward, efficient, and reproducible reversed-phase high-performance liquid chromatography (RP-HPLC) method has been developed and validated for the quantitative analysis of ofloxacin & ornidazole in both bulk form and combined liquid oral dosage. The mobile phase consisted of a phosphate buffer (adjusted to pH 2.4 using orthophosphoric acid) and acetonitrile in 87:13 v/v ratio. The stationary phase was a Thermo-Hypersil Phenyl column (250 mm × 4.6 mm, 5 micrometer) with an isocratic flow setup.49-50 UV detection was performed at 294 nanometer while the mobile phase flow rate was kept at 1.0 millilitre/mins. Ofloxacin & ornidazole had respective retention times of 10.40 and 5.69 minutes. All calibration curves displayed good linear correlation coefficients within the limits tested above ($r2 > 0.9995$). For ofloxacin and ornidazole, the linear dynamic range was 10–100 microgram/millilitre and 25–250 microgram/millilitre, respectively. Ofloxacin and Ornidazole had percentage recoveries of 100.48 & 99.84 percent, respectively. The method's validity is demonstrated by the fact that all of the analytical validation factors was established & discovered to be within the International Conference on Harmonization's (ICH) recommendations. The method evolved has been accurate, precise, & rugged with respect to the validated approach when applied for the quantifiable determination of ofloxacin & ornidazole in mixed liquid & oral dosage forms.47

**In vivo assessment of guar gum-based colon-targeted drug delivery systems for ornidazole in healthy human volunteers**

The current research aimed to observe the in vivo efficacy of colon-targeted ornidazole tablets on guar gum compared to an immediate-release ornidazole tablet (dose: 250 milligram) in human volunteers. The study was a cross-over type and included six healthy volunteers. HPLC was employed to estimate the plasma levels of ornidazole. The tablets targeting the colon gave a peak plasma concentration (C max of 1716.66 ± 125.83 ng/ml) at 11.91 ± 0.14 hours, whereas the fast release tablets of ornidazole gave a peak plasma concentration (C max of 2171.33 ± 278.15 ng/ml) at 2.91 ± 0.14 hours (T max). In comparison to immediate-release tablets, the delayed T max, lower C max, and reduced k an of ornidazole from guar gum-based colon-targeted ornidazole tablets suggest that the drug was released in the colon rather than the stomach or small intestine. The gradual release of ornidazole from the less absorbent colon may allow the drug to exert its effects locally in the colon. 51-52

**Evolution & verification of a stability-indicating reverse phase-hplc bioanalytical procedure for estimating bosentan in human plasma**

For quantification of bosentan in human plasma, a novel, straightforward, and accurate bio-analytical reverse-phase high performance liquid chromatography study was created and verified. Drug concentrations in human plasma were adequately determined by the proposed method. In Shimadzu HPLC instruments, which consisted of binary LC 10AT vp pumps, SIL 10AD vp Autosampler, and Phenomenex C18 column (150 mm × 4.6 millimeter, 5 micrometer particle size), isocratic elution mode was employed. The eluent was 20 mM sodium acetate buffer (pH 4.0) & methanol (35:65) at a rate of flow 1.0 millilitre/minute at a identification wave-vector of 220 nanometer. Internal standard was orniidazole. This method was validated based on ICH M10 principles. Bosentan in human plasma is precisely estimated with the present validated method across a concentration range of 52.5-3089.48 nanogram/millilitre. As regards selectivity, precision, accuracy, linearity, & recovery, the HPLC detection procedure for the quantification of prazosin and polythiazide in human plasma met the acceptance criteria. The proposed method is applicable for pharmacokinetic analysis and therapeutic drug monitoring in clinical setting laboratory and is rapid, simple, accurate, and precise.53-55

**Quantitative spectrophotometric analysis of ornidazole tablet formulations using ibuprofen sodium as a hydrotropic solubilizing agent**

Hydrotropic solubilization is one of the methods applied to esclate the aqueous solvability of drugs that are less solvable in water. In current study, a hydrotropic solution of ibuprofen sodium (0.5 M) was applied to enhance the solubility of the poorly water-soluble drug ornidazole from the finely powdered tablet of the drug for spectrophotometric analysis.56-57 Beer's law was followed within the concentration range of 5–25 microgram/millilitre & ornidazole has its peak absorbance occurred at 320 nanometer. The recovery studies & statistical analysis support the results of the analysis. The suggested study can be suitably used in routine for estimation of ornidazole tablet since, it is innovative, straightforward, safe, accurate, cost-effective, & environmentally friendly. The investigation was not affected by hydrotropic agents or commonly used tablet additives.[58-59]

## 2. CONCLUSION

As literature review indicates, ornidazole is the most effective against anaerobic bacteria. The conclusion of this study states about the several methods used for analysis like UV spectrophotometry, and HPTLC. This review also suggested that ornidazole could be used as basic pharmacophore for the preparation of other analogues which could be evaluated against other category of bacteria species. This review focused us regarding method development area through HPLC is very less. So, we can also develop some promising methods of ornidazole.

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