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Original Article

Development and Validation of a Stability-Indicating RP-HPLC Method for the Simultaneous Determination of Bupropion and Dextromethorphan in Pharmaceutical Dosage Forms

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ABSTRACT

Aim: The current study's objective was to determine whether bupropion and dextromethorphan in pharmaceutical dosage form could be quantified using a straightforward, accurate, highly sensitive, and specific Reverse Phase High-Performance Liquid Chromatography method and to evaluate the stability studies of the two drugs. **Materials and Methods:** The Phenomenex C18 instrument Mobile phase containing Buffer 0.01 N Na_2HPO_4: Acetonitrile (70:30) taken was pumped through column with a 1 mL/min flow rate. By assessing different validation parameters, the suggested approach was successfully validated. **Results:** Retention of bupropion and dextromethorphan were eluted at 2.21 min and 2.87 min. % Relative Standard Deviation RSD of the bupropion and dextromethorphan were and found to be 0.5 and 0.4 respectively. It was discovered that the mean percentage recovery for accuracy of dextromethorphan was 99.60% and for bupropion it was 99.56%. The Limits of Detection (LOD) for dextromethorphan and bupropion were determined to be 0.60 µg/mL and 0.80 µg/mL, correspondingly. It was discovered that the Limits of Quantification (LOQ) for bupropion and dextromethorphan were 2.42 µg/mL and 1.81 µg/mL, respectively. Regression equation of bupropion is Y=52904x+ 8801.4 for linearity of bupropion and Y= 48512x+3943.5 for linearity of dextromethorphan Validation parameters were within limits. **Conclusion:** The developed Reverse Phase High-Performance Liquid Chromatography technique has shown to be appropriate for the concurrent measurement of dextromethorphan and bupropion in therapeutic preparations. The developed method demonstrated satisfactory performance across all evaluated validation parameters.

Keywords: Bupropion, Dextromethorphan, Formulations, Pharmaceutical and Retention.

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INTRODUCTION

Chromatography is a powerful method for measuring many analytes in complicated materials, making it an indispensable tool for analytical chemists.[1–4] Chromatography is useful for determining the chemical structure and concentration of a mixture of compounds known as analytes.[5–7] Chromatography is divided into three categories: gas, liquid, and supercritical fluid chromatography.[8] Ion exchange, size separation, and gel-based electrophoretic procedures are all examples of liquid chromatography techniques. This volume provides a fundamental introduction to liquid and gas chromatography.[9] A 2022 technique for APIs, a 2023 method for the fixed-dose tablet, and a 2025 QbD-based RP-HPLC method are examples of simultaneous RP-HPLC methods that have been reported in recent literature.[10] Significantly, chromatographic separation, void-volume elution, placebo interference, and/or thorough stability-indicating examination are among the shortcomings of the preceding techniques.[11–12] Figure 1 depicts the chromatographic categorisation. The recommended method was carefully tuned to offer sufficient chromatographic resolution in a short analysis time and validated in compliance with the applicable ICH requirements.

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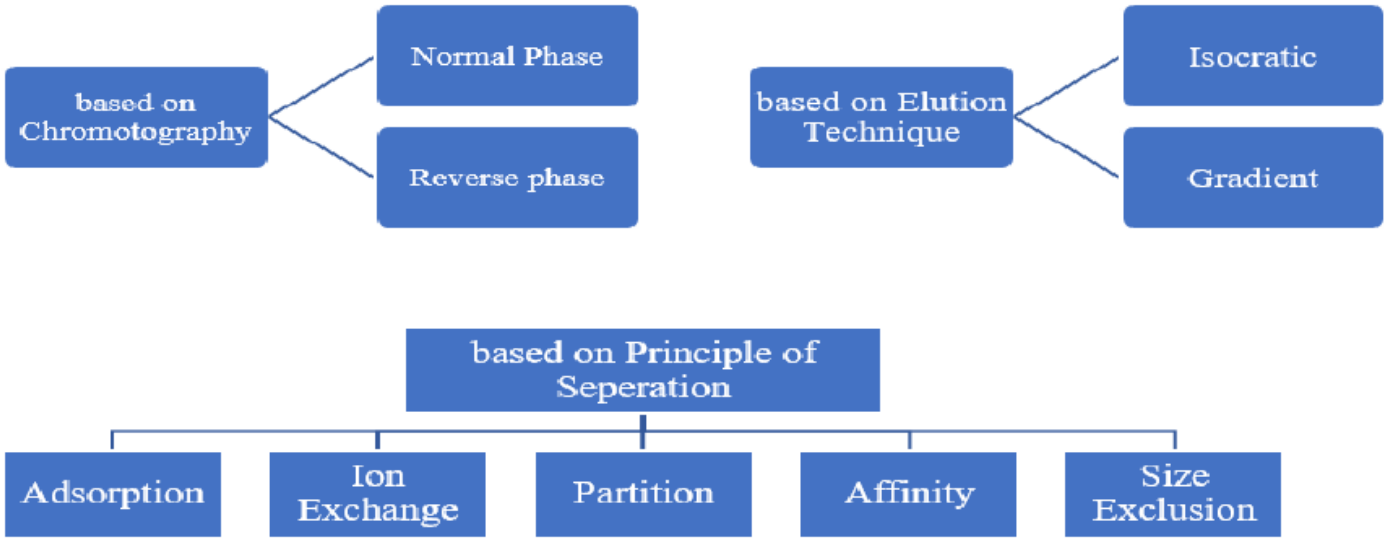


Figure 1: Chromatographic classification.

MATERIALS AND METHODS

Statement of Ethics

Neither experimental animals nor human subjects were used in this investigation. Consequently, ethical clearance was not needed.

Drug Profile: Bupropion

Bupropion is an aromatic ketone derived from propiophenone that has a chlorine substituent at position 3 on the phenyl ring and a tert-butylamino group at position 2. It is a secondary amino chemical, an aromatic ketone, and a type of monochlorobenzene that has antidepressant, xenobiotic, and environmental polluting properties.[13]

Mechanism of Action

As a Norepinephrine/Dopamine-Reuptake Inhibitor (NDRI), bupropion slightly inhibits the enzymes responsible for the absorption of dopamine and norepinephrine from the synaptic cleft, extending the duration of action of the neurotransmitters within the neural synapse and their downstream effects.[14] The structure was shown in Figure 2.

Absorption: Poorly absorbed

Dextromethorphan

Dextromethorphan is a synthetic, non-opioid antitussive (cough suppressant) widely used to relieve dry, non-productive cough accompanying common cold, influenza and also additional upper respiratory tract infections.[15] It is the dextrorotatory isomer of levorphanol but lacks significant analgesic or addictive effects at therapeutic doses. N-methyl-D-aspartate NMDA receptor antagonist dextromethorphan is used to treat dry cough.[16]

The mode of action

Dextromethorphan is an agonist of the sigma-1 receptor and an uncompetitive NMDA antagonist with modest affinity. The structure was shown in Figure 2.

Chemicals and Instruments

Chemicals and Solvents used:

The investigation employed only analytical-grade chemicals and solvents that were purchased from Rankem.

- MeCN Trimethyl Amine - A.R Grade used.
- Orthophosphoric acid - A.R Grade used.
- N HCl.
- Potassium dihydrogen ortho phosphate - AR Grade.
- Perchloric acid.
- NaOH.

Devices

1. Denver's electronic balance.
2. BVK Enterprises Ultrasonicator.
3. BVK Enterprises' pH gage.
4. HPLC Waters 2695.
5. Double beam UV spectrophotometer from Lab India.

Sample Processing

Standard Preparation of Stock Solutions

A 50 mL volumetric flask was filled with dextromethorphan and bupropion after they had been carefully weighed. The mixture was sonicated until it was totally dissolved after adding roughly 30

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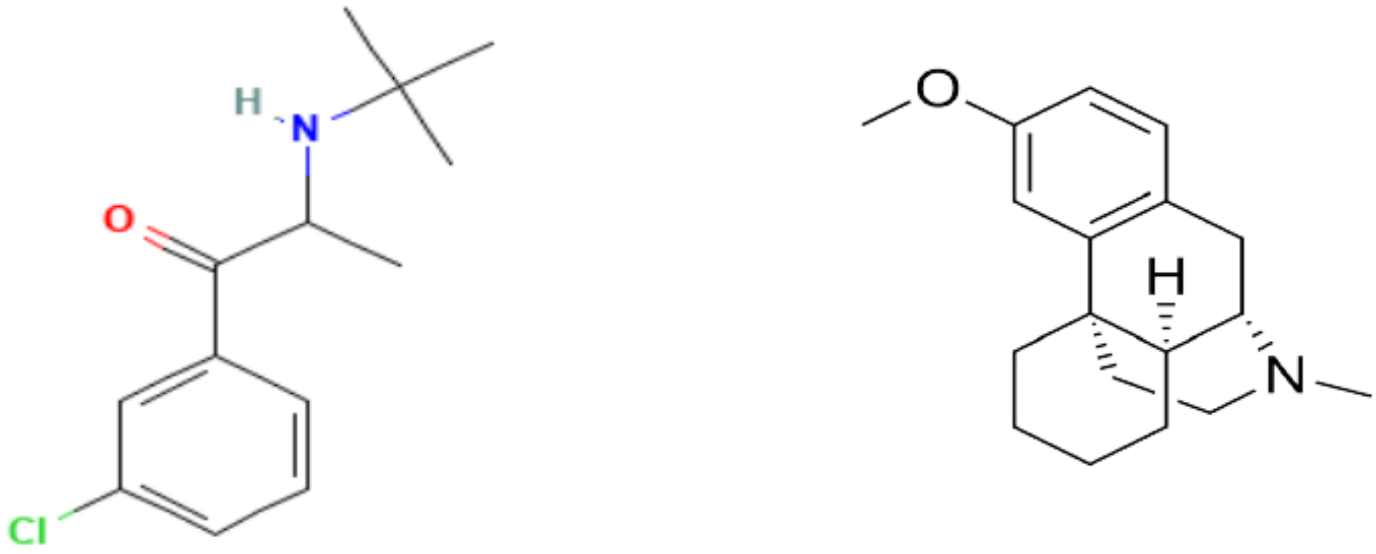


Figure 2: Structure of bupropion and Structure of dextromethorphan.

to 40 mL of diluent (50:50 v/v water). Subsequently, the diluent was appropriately added to the volume and well mixed. The exact amounts weighed were used to calculate the concentrations of dextromethorphan and bupropion in the standard stock solution.

Working Standard Solution

To achieve the desired higher concentrations, a suitable portion of the standard stock solution was moved into a volumetric flask and diluted to the necessary volume with the diluent of bupropion and dextromethorphan. All dilution calculations were verified to ensure consistency between the stock concentration, aliquot volume, final volume, dilution factor, and final concentration.

Preparing the Sample

The average pill weight was determined after weighing each of the five tablets independently. A carefully weighed quantity of the powdered formulation, which contained the required doses of bupropion and dextromethorphan, was finely pulverized and then added to a 50 mL volumetric flask. The mixture was sonicated to enable full analyte extraction after 25-40 mL of diluent was added. Diluent was added to get the volume up to the necessary level after letting the solution cool if necessary. After thoroughly mixing the liquid, a 0.45 µm nylon syringe filter was used to filter it. An appropriate fraction of the filtrate was further diluted with the diluent to reach the required working concentration for HPLC analysis.

Validation parameters

- **System suitability parameters:** 6 set of injections was injected.

Precision

- **Std working solutions:** 1 mL of stock sol was put into a 10-mL volumetric flask and diluted. (50µg/mL bupropion, 25µg/mL dextromethorphan).[17]

Linearity

From stock composition subsequent volumes are pipetted out in diverse flasks. Over a wide concentration range of 25-150% of the target concentration, the approach's linearity was shown. Aliquots of 0.25 mL, 0.5 mL, 0.75 mL, 1 mL, 1.25 mL, and 1.5 mL of the stock solution were added to a 50 mL volumetric flask. These aliquots were diluted with mobile phase until the concentration reached 25, 50, 75, 100, 125, and 150 ppm, respectively. The HPLC system was filled with the solutions in accordance with the test protocol. Plotting a calibration curve for concentration versus peak area was done.

Accuracy

By spiking the drug substances bupropion and dextromethorphan on a placebo in the range of approximately 50 to 150 of test concentration, a series of solutions were generated in triplicate (6 preparations for 50 and 150% level), and they were analyzed according to specification level triplicate injections for 50%, 100%, and 150%. RSD, individual recovery, mean recovery, and linearity were calculated at each level.

- **LOD:** The standard deviation of the intercepts was calculated after the calibration curve was replicated three times.
- **LOQ:** Standard deviation of the intercepts was computed after three repetitions of the calibration curve.

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Table 1: Optimised chromatographic conditions and system suitability parameters.

Parameter	Optimised condition		
Mobile phase	0.01 N Na_2HPO_4 : Acetonitrile (70:30, v/v)		
Column	Intesil C18 (4.6 × 150 mm, 5 µm)		
Flow rate	1.0 mL/min		
Detection wavelength	230 nm		
Run time	10 min		
Injection volume	10 mL*		
Column temperature	24°C		
System suitability parameter	**Bupropion**	**Dextromethorphan**	**Resolution**
Retention time (min)	2.210-2.229	2.864-2.878	-
Theoretical plates	7616-658	9500-9587	-
Tailing factor	1.25-1.26	1.19-1.20	-
Resolution (Rs)	-	-	5.9-6.0

Table 2: Validation parameters of the proposed RP-HPLC method.

Validation parameter	Bupropion	Dextromethorphan
Regression equation	Y=52904x + 8801.4	Y=48512x + 3943.5
Slope	52,904	48,512
Intercept	8,801.4	3,943.5
Correlation coefficient (r)	0.9990	0.9998
Repeatability (%RSD)	0.5	0.4
Intermediate precision (%RSD)	0.8	0.5
LOD	0.80	0.60
LOQ	2.42	1.81
Robustness: F (–)	0.2	0.2
Robustness: F (+)	0.7	0.5
Robustness: M (–)	0.1	0.1
Robustness: M (+)	0.3	0.3
Robustness: T (–)	0.3	0.3
Robustness: T (+)	1.1	1.2

Specificity

By examining the diluent blank, placebo solution, standard solution with bupropion and dextromethorphan, and commercial formulation, the specificity of the suggested RP-HPLC method was assessed. We looked for any interfering peaks at the analyte retention periods on the chromatograms of the blank and placebo formulations.

Forced Degradation Studies

Bupropion and Dextromethorphan were subjected to independent forced degradation investigations in acidic, alkaline, oxidative, thermal, photolytic, and hydrolytic settings in order to assess the suggested RP-HPLC method's capacity to indicate stability. The controls were unstressed drug solutions. Under the same stress conditions, corresponding blank solutions were made without the medication ingredient.[18]

Acidic degradation

2 mL of 5% HCl and a tiny amount of diluent were added to a 20-mL volumetric flask after 5 mL of the corresponding drug stock solution had been transferred. 20 min were spent heating the mixture to 80°C. The solution was cooled to room temperature and neutralised with 2 mL of 5% NaOH following the conclusion of the stress treatment. Next, diluent was added to bring the volume up to 20 mL. Prior to HPLC analysis, a 0.45 µm nylon syringe filter was used to filter the residual solution after the first 4 mL of the produced solution was discarded.

Alkaline degradation

A 10 mL volumetric flask was filled with 1 mL of the matching drug stock solution, and then 1 mL of NaOH was added. For 3 min, the mixture was refluxed at 60°C. After the solution cooled to room temperature, diluent was added to bring the volume up to 10 mL after neutralising it with 2 mL of 5% HCl. The remaining solution was filtered using a 0.45 µm nylon syringe filter prior to HPLC analysis, with the first 4 mL being discarded.

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Table 3: Accuracy and assay results of bupropion and dextromethorphan.

Drug	Spiking level (%)	Amount spiked	Amount recovered	Recovery (%)
Bupropion	50	21	21.053	100.25
Bupropion	50	21	20.825	99.17
Bupropion	50	21	20.957	99.80
Bupropion	100	42	41.657	99.18
Bupropion	100	42	41.751	99.41
Bupropion	100	42	41.954	99.89
Bupropion	150	63	62.694	99.51
Bupropion	150	63	62.721	99.56
Bupropion	150	63	62.549	99.28
Dextromethorphan	50	9	8.947	99.41
Dextromethorphan	50	9	8.925	99.17
Dextromethorphan	50	9	8.943	99.37
Dextromethorphan	100	18	18.045	100.25
Dextromethorphan	100	18	17.838	99.10
Dextromethorphan	100	18	17.962	99.79
Dextromethorphan	150	27	26.927	99.73
Dextromethorphan	150	27	26.859	99.48
Dextromethorphan	150	27	27.021	100.08

Mean recovery: Bupropion 99.56%; Dextromethorphan 99.60%.

Oxidative degradation

A millilitre of the corresponding medication stock solution was treated with 20 % v/v Hydrogen Peroxide (H_2O_2) and kept at 60°C for half an hour. To achieve the necessary concentration for HPLC analysis, the solution was cooled and suitably diluted with the diluent after the stress treatment was finished. A 0.45 µm nylon syringe filter was employed to filter the fluid before injection.

Thermal degradation

5 mL of the relevant medication stock solution was put into a 20 mL volumetric flask and diluted with diluent. The mixture was heated to 105°C for an entire day. After cooling to room temperature, the solution was filtered through a 0.45 µm nylon syringe filter before being subjected to HPLC analysis.

A comparison was made between the stressed and unstressed samples. From the chromatographic response, the percentages of recovery and degradation were computed. The chromatograms were also examined for additional peaks and their separation from the Bupropion and Dextromethorphan peaks.

OUTCOMES AND DISCUSSION

Observation

Dextromethorphan and bupropion separated at 2.21 and 2.87 min with good resolution. This approach was optimised and validated by the excellent plate count and tailing factor.

Issues encountered during diverse trials

In order to successfully separate bupropion and dextromethorphan during the original method development, a number of chromatographic studies were carried out. Various ratios of organic solvent and aqueous phase were assessed. While increasing the organic-phase proportion led to decreased retention and insufficient analyte separation, greater aqueous-phase proportions were associated with longer analysis times and longer retention times. Poor peak shape and peak broadening were noted in certain experiments, suggesting that additional chromatographic condition optimisation was necessary. Retention duration, peak resolution, and peak symmetry were also impacted by variations in flow rate. In order to achieve an appropriate balance between resolution and analysis duration, the flow rate and mobile-phase composition were methodically changed. The Figure 3 displayed the optimised chromatogram for both drugs and linearity data for bupropion.

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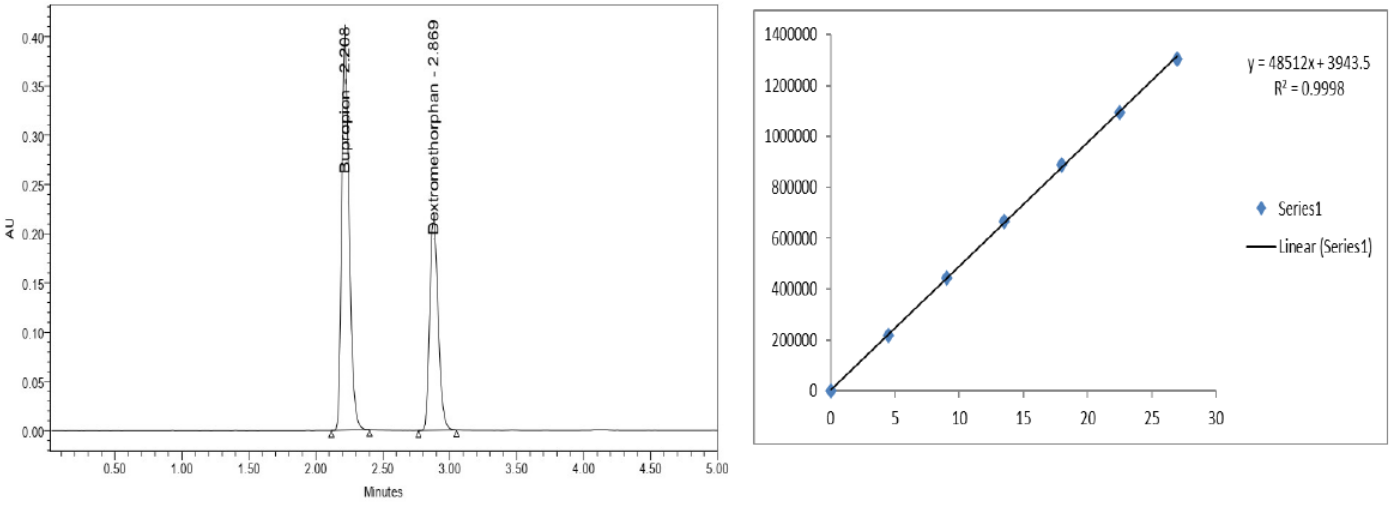


Figure 3: Structure of optimised Chromatogram and Linearity Calibration data of Bupropion.

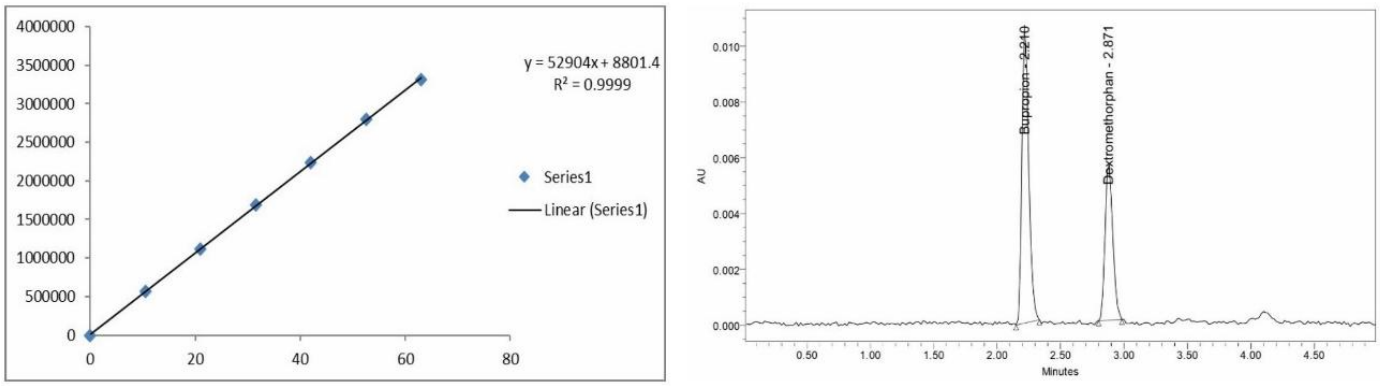


Figure 4: Linearity Calibration data of Dextromethorphan and LOD Chromatogram.

Validation parameters

System Suitability

Table 1 displayed data about Optimized chromatographic conditions and system appropriateness. Tables 2 validation parameters of the proposed method were shown. In Table 3 accuracy and assay results were displayed.

Linearity

Observation: Y=52904x + 8801.4 for linearity of Bupropion and Y=48512x+3943.5 for linearity of Dextromethorphan 0.999 for correlation of bupropion and 0.9998 for linearity of dextromethorphan. The linearity data for dextromethorphan and LOD chromatogram for both drugs was shown in Figure 4.

Precision

Observation: The System precision area for bupropion and dextromethorphan were found to be 0.6 and 0.4 correspondingly. Tables 4 and 5 contained data for precision.

IMAGE MISSING

Figure 5: LOQ Chromatogram and Chromatogram of Working Standard.

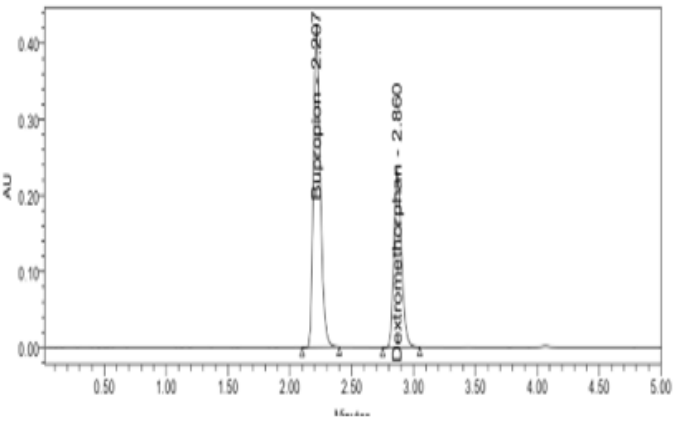


Figure 6: Chromatogram of working Sample.

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Table 4: Forced degradation studies of bupropion and dextromethorphan.

Degradation condition	Bupropion area	Recovered (%)	Degraded (%)	Dextromethorphan area	Recovered (%)	Degraded (%)
Acid	2,139,445	95.28	4.72	841,267	94.57	5.43
Base	2,141,514	95.37	4.63	843,054	94.77	5.23
Peroxide	2,130,109	94.86	5.14	832,870	93.63	6.37
Thermal	2,178,882	97.04	2.96	863,392	97.06	2.94
UV	2,192,287	97.63	2.37	872,283	98.06	1.94
Water	2,226,600	99.16	0.84	882,983	99.26	0.74

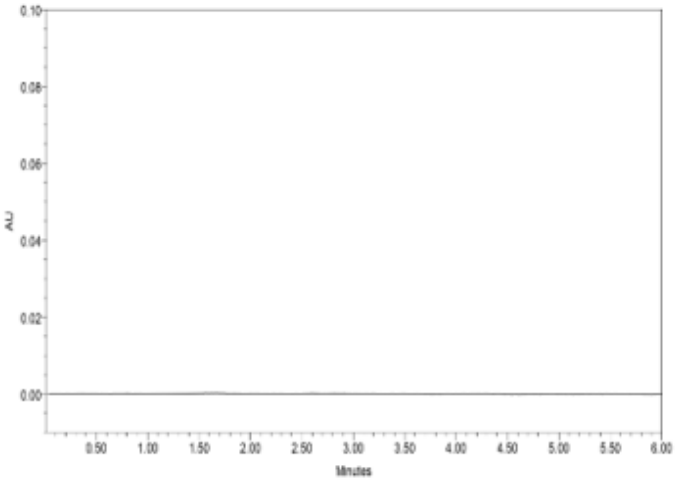


Figure 7: Specificity of blank.

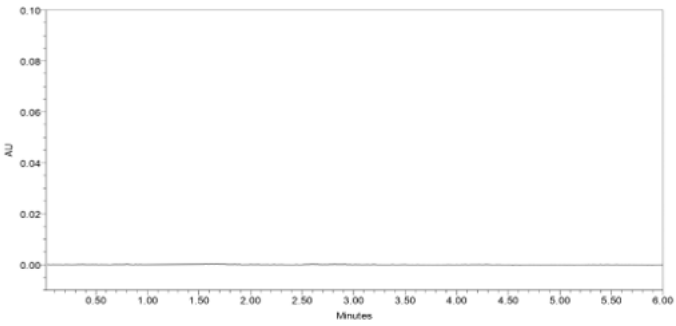


Figure 8: Specificity of placebo.

Intermediate Precision

For bupropion and dextromethorphan, the percentage Relative Standard Deviation (% RSD) determined as 0.8% and 0.5%, respectively. The suggested approach has adequate intermediate precision and is repeatable for the simultaneous estimation of bupropion and dextromethorphan, since both values were well below the permissible limit of not more than 2.0%.

Repeatability

The reproducibility of the proposed RP-HPLC method was evaluated by looking at duplicate samples of dextromethorphan and bupropion under identical experimental conditions. For bupropion and dextromethorphan, the percentage relative standard deviation determined as 0.5% and 0.4%, respectively. The suggested analytical approach was deemed repeatable and accurate for the simultaneous quantification of bupropion and dextromethorphan since the % RSD values were determined to be less than 2.0%.

Accuracy

Recovery trials for bupropion and dextromethorphan were utilised to evaluate the accuracy of the proposed RP-HPLC technology. The mean percentage recovery was found to be 99.60% for dextromethorphan and 99.56% for bupropion. The recovery results falling within acceptable boundaries demonstrate the accuracy and suitability of the recommended method for the contemporaneous estimate of bupropion and dextromethorphan in medicinal formulations.

Sensitivity

The limits of detection for dextromethorphan and bupropion discovered to be respectively, 0.60 µg/mL and 0.80 µg/mL. It was discovered that the limits of quantification for bupropion and dextromethorphan were 2.42 µg/mL and 1.81 µg/mL, respectively. These findings show that both analytes can be detected and quantified using the suggested RP-HPLC method with adequate sensitivity. Chromatogram of working standard and LOQ Chromatogram of both drugs were indicated in Figure 5. Chromatogram of working sample was shown in Figure 6.

Specificity

In the blank or placebo chromatograms, neither the bupropion nor the dextromethorphan retention time showed any notable interference peaks. Bupropion and dextromethorphan were represented by well-resolved peaks in both the standard and sample chromatograms. The two analytes' chromatographic separation was adequate. Blank and placebo samples showed no chromatographic interference. Figure 7 displayed the specificity data of blank and Figure 8 displayed the specificity data of placebo.

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Robustness

Observation

It was discovered that the robustness of dextromethorphan and bupropion was within the recommended bounds.

Assay

The mean percentage assay for bupropion was determined to be 99.37 %, with a 0.48 standard deviation and a 0.48% Relative Standard Deviation (% RSD). The mean percentage assay for dextromethorphan was determined to be 99.43 %, with a 0.35 standard deviation and a 0.35 percentage Relative Standard Deviation (% RSD). The suggested method's low % RSD number shows good accuracy and consistency. The approach is appropriate for the precise and trustworthy estimation of the analyte in the pharmaceutical formulation, as evidenced by the assay result falling within the allowed bounds.[19]

Forced degradation studies were accomplished to assess the stability-indicating potential of the recommended RP-HPLC technique for the concurrent detection of bupropion and dextromethorphan. The therapeutic compounds were subjected to various stress situations, such as oxidative degradation, thermal degradation, acidic and alkaline hydrolysis, and photolytic degradation. The homogeneity of the analyte peaks under all stress situations was validated by the peak purity data. As a result, the suggested RP-HPLC approach may be regarded as specific and stability-indicating. It is appropriate for routine quality-control analysis and tracking the degradation behavior of bupropion and dextromethorphan in pharmaceutical formulations. Data for degradation was indicated in Table 4.

CONCLUSION

The findings of the RP HPLC estimation of bupropion and dextromethorphan were within the acceptable range. The suggested method was shown to be easy, quick, accurate, precise, and dependable for the concurrent estimate of bupropion besides dextromethorphan in a form of combination dosage. The approach can be successfully employed for routine analysis and control of quality for bupropion and dextromethorphan in dosage forms for medications, provided that the assay results and validation parameters are suitable.

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ABBREVIATIONS

RSD: Relative Standard Deviation; **LOD:** Limit of Detection; **LOQ:** Limit of Quantification; **NDRI:** Norepinephrine/Dopamine Reuptake Inhibitor; **NMDA:** N-Methyl-D-Aspartate; **ICH:** International Council for Harmonisation; **API:** Active Pharmaceutical Ingredient; **RP-HPLC:** Reverse-Phase High-Performance Liquid Chromatography; **Na_2HPO_4:** Disodium Hydrogen Phosphate; **QbD:** Quality by Design; **HCl:** Hydrochloric Acid; **UV:** Ultraviolet Radiation; **µg:** Microgram; **mL:** Millilitre; **°C:** Degree Celsius; **µm:** Micrometre; **NaOH:** Sodium Hydroxide; **ppm:** Parts Per Million; **v/v:** Volume/volume; **H_2O_2:** Hydrogen Peroxide.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

FINANCIAL SUPPORT AND OTHER SPONSORSHIP

For this study project, no funding or sponsorship was obtained.

AUTHORS CONTRIBUTION

Penumudi Sri Jyothi: Conceptualization, Methodology, Supervision. **U. Bhanu Prasad:** Research work done, Research Scholar. **Dr. Rakam Gopi Krishna:** Data Analysis, Writing - Review and Editing of Original Draft. **Dr. Arunabha Mallik**- Supervision.

ETHICS STATEMENT

Neither experimental animals nor human subjects were used in this investigation. Consequently, ethical clearance was not needed.

REFERENCES

1. Yasir M, Hira H. Development and validation of RP-HPLC method for roflumilast nano particles in rat plasma for pharmacokinetic study analysis. Curr Pharm Anal. 2025;20(9):1083–1091. doi: 10.2174/0115734129348436241209110149.
2. Kemal HS, Tarekegn B, Kaleab A, Ayenew A. Development and validation of RP-HPLC method for the simultaneous determination of Levamisole HCl and Oxyclozanide and its application in the assay of veterinary bolus formulations. Curr Pharm Anal. 2021;17(5):679–689. doi: 10.2174/1573412916666200211101633.
3. Marin A, García E, Garcia A, Barbas C. Validation of a HPLC quantification of acetaminophen, phenylephrine and chlorpheniramine in pharmaceutical formulations: capsules and sachets. J Pharm Biomed Anal. 2002;29(4):701–714. doi: 10.1016/s0731-7085(02)00124-3. PMID: 12093499.
4. Indian Pharmacopoeia, The Controller of Publication, Government of India, Delhi. 5th edn. 2007;1514-5.
5. Pompili M, Berardelli I, Erbuto D, Caraci F. Can dextromethorphan-bupropion reduce mental pain in depressed individuals? A hypothesis-generating overview perspective. Ann Gen Psychiatry. 2025;24(1):15. doi: 10.1186/s12991-025-00549-x. PMID: 40098206.
6. Korolkovas, A. Essential of Medicinal Chemistry, 2nd edn, Wiley Interscience, New York, 1988.
7. Rakam GK, Srinivasa M, Kavya V. Method development and validation of RP-HPLC method for the determination of sumatriptan in bulk and pharmaceutical dosage form. Res J Pharm Technol. 2021:5856–5862. doi: 10.52711/0974-360X.2021.01019.
8. Skoog DA, Holler FJ, Nieman TA. Principles of Instrumental Analysis. 5th edition, 2006, 733-738. Bookman Ed., São Paulo, No. 1

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9. Rakam GK, Mallik A, Sucharitha CH. Method Development and Validation of Reverse Phase High Performance Liquid Chromatography Method for Estimation of Ondansetron and Pantoprazole in their Tablet Dosage Form. Indian J Pharm Sci. 2022;84(2):483–492. doi: 10.36468/pharmaceutical-sciences.942.
10. Anuj KG, Sanjay KB. Quantitative determination of acetaminophen in the tablet dosage forms by RP-HPLC method without using buffers. J. Chem. Health Risks. 2023;13(4):1021-6.
11. Ngo S, Rine NI, Kistamgari S, Smith GA L, L. Hays H. Characteristics of dextromethorphan-bupropion exposures compared with exposures involving dextromethorphan alone or bupropion alone reported to United States poison centers. Toxicology Communications. 2025;9(1):2530331. doi: 10.1080/24734306.2025.2530331.
12. International Conference on Harmonization, Topic Q2B, Validation of Analytical Method: Methodology, ICH topic Q2B, the European Agency for the Evaluation of Medical Products 1996.
13. Department of Pharmaceutical Chemistry, Marri Laxman Reddy Institute of Pharmacy, Dundigal, Hyderabad, Telangana, India-500043, Rakam GK, Kadagoni P, Department of Pharmaceutical Analysis, Marri Laxman Reddy Institute of Pharmacy, Dundigal, Hyderabad, Telangana, India-500043, Ramesh K, Department of Pharmaceutical Analysis, Marri Laxman Reddy Institute of Pharmacy, Dundigal, Hyderabad, Telangana, India-500043, et al. Analytical method development and validation of remdesivir and griseofulvin in API and its dosage form by RP-HPLC. Int J Drug Deliv Technol. 2025;15(01):139–145. doi: 10.25258/ijddt.15.1.19.
14. Kalra K, Naik S, Jarmal G and Mishra N. Spectrophotometric method for simultaneous estimation of paracetamol and domperidone in tablet formulation. Asian J. Res. Chem. 2009; 2(2):112-4.
15. Sathish KK, Adinarayana P, Vinod KM, Govinda RK. Development and validation of RP-HPLC method for simultaneous estimation of paracetamol and flupirtine maleate. Asian J Pharm Ana. 2015;5(2):105–111. doi: 10.5958/2231-5675.2015.00017.4.
16. Yogesh S. Medicinal Plants as Source of Antiemetic Agents: A Review. AJPTech 2011;1(2):25-7.
17. Meena AK, Rao MM, Meena RP, Panda P, Renu. Pharmacological and phytochemical evidences for the plants of Wedelia genus- a review. Asian J. Pharm. Res. 2011;1(1):07-12. DOI: Not Available
18. Blair G, Wells C, Ko A, Modarres J, Pace C, Davis JM, et al. Dextromethorphan and bupropion reduces high level remifentanil self-administration in rats. Pharmacol Biochem Behav. 2020;193:172919. doi: 10.1016/j.pbb.2020.172919. PMID: 32246985.
19. Chavva RR. Developed and Validated for the Estimation of Bupropion and Dextromethorphan in a Fixed Dose Combination of the Tablet. Turk J Pharm Sci. 2024;21(2):125–132. doi: 10.4274/tjps.galenos.2023.87522. PMID: 38742814.

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