International Journal of Pharmaceutical research and Applications
Volume 11, Issue 3, May-June2026, pp:1841-1856 www.ijprajournal.com ISSN:2456-4494

Comparative Evaluation of Two Marketed Paracetamol Tablet Formulations

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Date of Submission: 05-01-2026 Date of Acceptance: 15-06-2026

ABSTRACT

The present study was carried out to perform a comparative evaluation of two marketed paracetamol tablet formulations, namely Dolo 650 and another marketed brand containing Paracetamol 650 mg. Paracetamol is one of the most commonly used analgesic and antipyretic drugs for the treatment of fever and mild to moderate pain. The objective of this study was to compare the physicochemical properties and quality control parameters of both marketed tablets according to official pharmacopeial standards to ensure their safety, efficacy, and uniformity. Initially, both tablet formulations were evaluated for general appearance, including colour, shape, size, surface texture, and identification markings.

These parameters help in confirming product uniformity and patient acceptability. Further evaluation tests such as weight variation, hardness, thickness, and friability were performed to determine tablet uniformity, mechanical strength, and resistance to handling during manufacturing, packaging, and transportation. Drug content analysis was carried out using UV–Visible spectrophotometry to verify the presence of the correct amount of active pharmaceutical ingredient in each tablet. Performance evaluation tests including disintegration and invitro dissolution studies were conducted to assess the rate at which tablets break down and release the drug under simulated physiological conditions.

Dissolution samples were analyzed using UV spectrophotometric methods at the appropriate wavelength specific for paracetamol. The results obtained from all evaluation parameters were compared with pharmacopeial limits. Both marketed tablet formulations complied with standard specifications, demonstrating acceptable hardness, minimal friability, uniform drug content, proper disintegration time, and satisfactory dissolution profile. In conclusion, the comparative study revealed that both paracetamol tablet brands showed similar quality characteristics and drug release behavior. Therefore, both formulations can be considered therapeutically effective, safe, and suitable for clinical use, indicating their interchangeability based on standard pharmaceutical evaluation parameters.

I. INTRODUCTION

The evolution of oral dosage forms has consistently aimed to balance patient convenience with optimal pharmacokinetic performance. According to the Food and Drug Administration and the European Pharmacopoeia, effervescent tablets are defined as solid dosage forms designed to dissolve or disperse in water before use, typically containing acidic substances and carbonates that react rapidly to release carbon dioxide [1,2]. This category of pharmaceuticals is experiencing a significant surge in popularity among clinicians and patients due to several biopharmaceutical advantages. The primary benefit is the accelerated release of the active pharmaceutical ingredient (API), bypassing the rate-limiting disintegration step required for conventional tablets [3,4]. This results in faster absorption and an earlier onset of therapeutic action, which is critical for acute conditions such as pain and fever [5,6]. Furthermore, administering the drug in a pre-dissolved state minimizes the localized irritation of the gastrointestinal mucosa, a common drawback of solid acetylsalicylic acid (ASA) [7,8]. From a clinical perspective, effervescent forms enhance patient compliance, particularly in pediatric and geriatric populations where swallowing large tablets (dysphagia) is a major barrier to adherence [4,9]. They also facilitate the conversion of poorly soluble compounds into solution via salt formation and carbon dioxide-induced solubilization, while simultaneously allowing for the correction of unpleasant organoleptic properties through sophisticated flavoring systems [8,10,11]. The manufacturing of effervescent tablets is a sophisticated technological process requiring a complex multicomponent system, typically involving 5 to 15 functional ingredients [12,13]. The core functionality is driven by a gas-forming mixture (acidic and alkaline fractions), which usually constitutes 80%-95% of the total tablet mass [10,13].

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While anhydrous citric acid and sodium bicarbonate remain the most common agents, recent advances explore organic acids like fumaric, malic, or tartaric acid to optimize reaction kinetics and the final solution's pH [7,14]. To prevent premature interaction between these highly hygroscopic fractions during storage, the role of stabilizing agents is paramount. High-molecular compounds, such as polyvinylpyrrolidone (Povidone® K25) and various polyethylene glycols (PEGs) (PEG 6000), function as essential binders that also provide a protective barrier against moisture [6,10]. A critical requirement for this technology is the selection of fillers with high water solubility and superior compressibility for direct compression [11,15]. Functional excipients like anhydrous lactose *(SuperTab® 22AN),* lactose monohydrate (*Tablettose® 80*), and polyols such as sorbitol *(Neosorb® P60W, Parteck®* SI400) and mannitol *(Perlitol® 300DC)* play a dual role as structure-formers and dissolution promoters [3–5]. Specialized fillers, including dextrose (*Compri-Zuger®),* sugar spheres *(Scerinerts® 50),* and microcrystalline cellulose micropellets *(Cellets® 100),* are often utilized to enhance tablet hardness, which is frequently a weak point in effervescent systems [6,11]. To achieve rapid disintegration, the multifunctional co-processed excipient Ludipress® or superdisintegrants like crospovidone *(Polyplasdone® XL-10*) are vital for accelerating the matrix breakup [10]. Furthermore, technological challenges like blend adhesion to the tablet press necessitate water-soluble lubricants; hence, traditional magnesium stearate is strictly avoided due to its hydrophobicity and soapy taste, replaced by sodium stearyl fumarate or sodium lauryl sulfate to ensure solution transparency [8,10,13]. The fluidity of these hygroscopic blends is further maintained by advanced glidants like *Aerosil®* 200 or magnesium aluminosilicate *(Neuselin® US2),* while the organoleptic profile is refined using high-intensity sweeteners like sodium saccharin or aspartame and fruit flavorings (orange, lemon, etc.) [2,9,14]. The therapeutic rationale for this study is rooted in the welldocumented clinical synergy of ASA, paracetamol, and ascorbic acid. This triad provides a dual-action analgesic and antipyretic mechanism (acting on both central and peripheral pathways) while supporting the immune system during inflammatory processes [16,17]. Internationally, this combination is a gold standard for treating flu, colds, and migraines, marketed under prestigious brands such as *Afebryl® (Belgium, Portugal), Isofebril® vitamine C* (France), *Gripral + C ratiopharm®* (Germany), *Neo-Nisidina®* C (Italy), and Thomapyrin® mit Ascorbins¨ aure (Austria, Bulgaria). Despite its global success, this specific therapeutic combination is currently absent from the Ukrainian pharmaceutical market, representing a significant therapeutic gap [12,16]. In this research, this triad was intentionally selected as a "research object of maximum complexity" to investigate the technological boundaries of direct compression [15,18,19]. These three APIs possess vastly different physical properties – varying in solubility, particle morphology, and compressibility – making the achievement of blend homogeneity and stable flow a rigorous test for modern excipient matrices [20]. Developing a domestic product carries substantial socio-economic value, offering a more cost-effective and accessible alternative to imported analogs while simplifying the treatment regimen for local patients [12,21]. By utilizing a Quality by Design (QbD) approach with dispersion and regression analysis, we aim to overcome the inherent instability of ascorbic acid and the hygroscopicity of the effervescent base [14]. Consequently, the objective of this study is to develop a scientifically validated composition and direct compression technology for obtaining stable effervescent tablets containing 300 mg of ASA, 200 mg of paracetamol, and 300 mg of ascorbic acid. The research focuses on ensuring high-quality appearance, solution transparency, and pleasant organoleptic properties while strictly adhering to pharmacopoeia requirements for mass uniformity, mechanical hardness, friability, and rapid disintegratio

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Fig no 1

II. LITERATURE OF SURVEY

1. Tablet Dosage Forms

Tablets are solid dosage forms that contain medicine along with suitable excipients. They are usually prepared by compression or molding methods. Tablets are widely used because they are easy to swallow, provide an accurate dose, are convenient to carry, and have a long shelf life. According to the Indian Pharmacopoeia Commission, tablets must pass standard quality control tests such as weight variation, hardness, friability, disintegration, dissolution, and drug content uniformity to ensure safety and effectiveness.[25]

Many research studies have shown that evaluation tests are necessary to maintain uniform quality among different marketed tablet brands. Proper physical and chemical evaluation helps in providing consistent drug action and good patient compliance.[26]

2. Paracetamol as an Analgesic and Antipyretic Drug

Paracetamol, also called acetaminophen, is one of the most commonly used drugs for reducing fever and relieving pain. It is effective in treating headache, body pain, toothache, and fever. Compared to other pain-relieving drugs like NSAIDs, paracetamol causes fewer stomach-related side effects.

Different pharmaceutical companies manufacture paracetamol tablets under various brand names, including Dolo 650, which contains 650 mg of paracetamol and is widely used in medical practice. Because many brands are available, comparative evaluation is necessary to confirm that all brands provide similar therapeutic effects.[27]

3. Evaluation of Marketed Tablet Formulations

Quality control evaluation of tablets is important in pharmaceutical manufacturing and market surveillance. Comparative studies help determine whether different brands meet pharmacopeial standards.[26]

a) *General Appearance Test*

This test involves visual inspection of tablets for colour, shape, size, surface smoothness, and any defects.

Uniform appearance indicates good manufacturing quality and improves patient acceptance.

b) *Weight Variation Test*

Weight variation ensures that each tablet contains the proper amount of drug. Tablets must fall within specified limits according to pharmacopeial standards.[27]

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c) *Hardness Test*

Hardness testing measures the strength of tablets. Adequate hardness prevents tablet breakage during handling and transportation while allowing proper disintegration.

d) *Friability Test*

Friability testing checks tablet resistance to abrasion and mechanical shock. A friability value less than 1% indicates good tablet strength.

e) *Thickness Test*

Thickness measurement ensures uniform tablet size and helps maintain consistency during packaging and drug release.

4. Drug Content Determination by UV–Visible Spectrophotometry

UV–Visible spectrophotometry is a simple and accurate analytical method used for drug content estimation. It measures the absorbance of paracetamol at its maximum wavelength (λmax) to determine the exact drug concentration present in tablets.[25]

5. Disintegration Test

The disintegration test measures the time required for tablets to break into smaller particles after administration. Proper disintegration is necessary for drug dissolution and absorption in the body. Faster and uniform disintegration improves therapeutic effectiveness.[19]

6. Dissolution Test

In-vitro dissolution testing is an important quality control test that studies drug release from tablets in simulated body conditions. Dissolution studies help predict how the drug will behave inside the human body. Comparative dissolution testing helps determine similarity between different marketed brands.[25]

7. Need for Comparative Study

Different pharmaceutical companies may use different excipients and manufacturing methods for tablet preparation. These differences can affect hardness, disintegration time, and drug release. Therefore, comparative evaluation of marketed paracetamol tablets is important to ensure:[26]

- Compliance with pharmacopeial standards
- Uniform therapeutic effectiveness
- Safety and quality assurance
- Interchangeability between different brands.

III. AIM OF THE WORK

The aim of this study is to compare two marketed Dolo 650 paracetamol tablets by performing different pharmacopeial quality control tests to check their physical properties, drug content, and drug release behavior.[25]

IV. OBJECTIVES OF THE WORK

The main objectives of this project are:

1. To compare two marketed brands of Dolo 650 paracetamol tablets available in the market.

2. To check the general appearance of tablets such as colour, shape, size, and surface condition.

3. To perform the weight variation test to ensure each tablet contains a uniform dose of drug.

4. To evaluate tablet hardness to determine tablet strength and resistance to breakage

5. To measure tablet thickness to maintain uniform tablet size.

6. To carry out the friability test to check tablet resistance against abrasion and mechanical shock.

7. To determine drug content using UV–Visible spectrophotometry to confirm the correct amount of paracetamol present in tablets.

8. To perform the disintegration test to study how quickly the tablets break down after administration.

9. To conduct an in-vitro dissolution test to evaluate drug release from both tablet formulations.

10. To compare the obtained results with pharmacopeial standards and evaluate the quality, safety, and effectiveness of both marketed tablets.

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PLAN OF WORK

The present study was planned to compare the quality of two marketed Paracetamol 650 mg tablets (Dolo 650) by performing standard pharmaceutical evaluation tests. The work was carried out in the following steps:[8,9,10]

1. Selection of Tablets

Two different marketed brands of Paracetamol 650 mg tablets were purchased from a local medical store for comparative evaluation.

2. Literature Survey

Information related to tablets, paracetamol drug properties, and evaluation tests was collected from pharmacy textbooks, research journals, and pharmacopeial guidelines.

3. General Appearance Test

Both tablet brands were visually checked for:

- Colour
- Shape
- Size
- Surface condition
- Identification marks

This test helps to confirm uniformity and product quality.

4. Weight Variation Test

Twenty tablets from each brand were weighed individually to check whether all tablets have uniform weight as per pharmacopeial limits.

5. Hardness Test

Tablet hardness was measured using a hardness tester to determine tablet strength and resistance to breaking during handling and transportation.

6. Thickness Test

Tablet thickness was measured using a vernier caliper to ensure uniform tablet size.

7. Friability Test

Friability testing was performed using a friabilator to check the ability of tablets to resist abrasion and mechanical shock.

8. Drug Content Analysis (UV Method)

The amount of paracetamol present in tablets was determined using UV–Visible spectrophotometry to confirm accurate drug content.

9. Disintegration Test

The time required for tablets to break into smaller particles in a disintegration apparatus was recorded.

10. In-Vitro Dissolution Study

Dissolution testing was carried out to study how quickly the drug is released from the tablets in dissolution medium.

11. UV Analysis of Dissolution Samples

Samples collected during dissolution were analyzed using UV spectrophotometry to calculate the percentage of drug release.

12. Comparison of Results

All obtained results were compared with pharmacopeial standards to evaluate the quality, safety, and performance of both marketed tablet brands.

V. METHODOLOGY

1. Selection of Tablets

Two different brands of Paracetamol 650 mg tablets (Dolo 650) were purchased from a local medical store. The tablets were checked for batch number, manufacturing date, and expiry date before starting the experiment.

2. General Appearance Test

First, the tablets were examined visually to check their physical appearance. The following characteristics were observed:

- Colour
- Shape
- Size
- Surface condition
- Identification marks

This test helps to ensure tablets are uniform and free from defects.

3. Weight Variation Test

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Twenty tablets from each brand were selected randomly and weighed individually using a digital weighing balance. The average weight was calculated to check whether all tablets have uniform weight according to pharmacopeial standards.

4. Friability Test

The friability test was performed using a friabilator. Tablets were weighed before and after rotation in the apparatus. The percentage weight loss was calculated to determine the ability of tablets to resist breakage and abrasion.

5. Hardness Test

Tablet hardness was measured using a hardness tester. This test determines the strength of tablets and their ability to withstand handling and transportation.

6. Thickness Test

Tablet thickness was measured using a vernier caliper to ensure all tablets have uniform size and proper compression.

7. Drug Content Analysis (UV Method)

The amount of Paracetamol present in the tablets was determined using UV–Visible spectrophotometry. Tablet samples were prepared, diluted properly, and absorbance was measured at a specific wavelength to calculate drug content.

8. Disintegration Test

The disintegration test was carried out using a disintegration apparatus. The time required for tablets to break down into smaller particles in the medium was recorded.

9. In-Vitro Dissolution Study

Dissolution testing was performed using a dissolution apparatus. Tablets were placed in dissolution medium maintained at controlled temperature and speed to study drug release.

10. UV Analysis of Dissolution Samples

Samples collected during dissolution testing were analyzed using UV spectrophotometry to calculate the percentage of drug released at different time intervals.

11. Comparative Evaluation

All results obtained from the tests such as appearance, weight variation, friability, hardness, thickness, drug content, disintegration time, and dissolution profile were compared between both tablet brands according to pharmacopeial standards.

VI. MATERIALS AND METHODS

Two brands (A & B) of paracetamol tablets with label claim of 500 mg were purchased from city local medical stores. Finally the two different brands were taken for evaluation.

Chemicals

Potassium-di-hydrogen phosphate, Sodium hydroxide and Distilled water. All chemicals used were of analytical grade.

Equipments

UV Visible Spectrophotometer (Chrom One), Digital Balance (Wensar Weighing Pvt.ltd.), Friability Apparatus (HICON), Disintegration Test apparatus (HICON), Dissolution Test Apparatus (HICON), Pfizer Hardness tester (HICON) and pH meter (Systronics) were used.

Methods

The study used Indian Pharmacopoeia 2018 to check the in vitro quality of Paracetamol tablets using different analytical techniques and procedure described in the pharmacopoeia.

PROCEDURE OF EVALUATION

Various analytical methods and tests are important for the development and manufacture of pharmaceutical formulations. For the evaluation, following quality control tests were performed for both the tablet brands in the study.
[15] [16]

Dimensional Parameters: The thickness and diameter of tablets were determined using digital Verniar Caliper. **Weight Variation:** 20 tablets were taken and were weighed using high precision weighing machine. Their average weight was noted down. Then each tablet was weight and their percent deviation from the average weight was determined.

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Hardness Test

A tablet was placed vertically on the Monsanto hardness tester. The load was then applied along the radial axis of the tablet. The weight or load required for breaking the tablet was noted down. Similarly it was done for 10 tablets.

Friability [22]

It was performed using Roche Friabilator. 10 tablets were weighed and placed in apparatus. The apparatus was rotated at a speed of 25 rpm. The apparatus was made to rotate for 4 min. The tablets were then weighed and the weights were compared with the initial weights.

The percentage friability was calculated using the formulas given in (Equation 1).

% F = [1 - (W/Wo)] x 100

Where, % F = Friability in percentage, Wo = Initial weight of tablets,
W = Weight of the tablets after revolution.

Tablet Disintegration [22]
It was performed using USP disintegration device. 6 tablets were placed in Disintegration test apparatus. It was maintained at 37 ± 0.2^0C containing distilled water. The time taken for a tablet to disintegrate was noted down.

Tablet Dissolution [22] [23]

For this test U.S.P. Type- 1 (Basket) Apparatus was used. Phosphate buffer (pH 5.8) as Dissolution Medium: The tablets were immersed into 900 ml. of Dissolution medium, the temperature of the dissolution medium was maintained at 37 ± 0.2^0C. The basket was rotated at a speed of 50 rpm. At 5, 10, 20,30,45,60 minutes 1 ml. of the medium was pipette out and replaced with fresh medium (Phosphate buffer pH 5.8). This was continued all along for 1 hour. The pipetted out samples were then diluted to 10 ml. with fresh dissolution medium and were then filtered. The absorbance of the filtered samples was determined using U.V. Spectrophotometer at λmax 243 nm.

EVALUATION OF COMPARATIVE STUDY OF MARKETED PARACETAMOL TABLETS
The present study was carried out to compare the pharmaceutical quality and performance of two marketed paracetamol tablet brands, namely Dolo-650 and Brand-B (Second Marketed Tablet). Various official and non-official evaluation parameters were performed according to pharmacopeial standards.[25]

General Appearance

The general appearance test is performed to evaluate the physical characteristics of tablets. It helps in identifying any visible defects and ensures uniformity and acceptability of the marketed formulations.[25]

Table no.[1]

Sr. No.	Parameters	Paracetamol Tab A	Paracetamol Tab B
1	Color	White	White
2	Shape	Round	Oval
3	Size	10mm	12mm
4	Odour	Odourless	Odourless
5	Taste	Bitter	Bitter
6	Surface Texture	Smooth and Glossy	Smooth and Slippery
7	Coating Type	Film Coated	Film Coated

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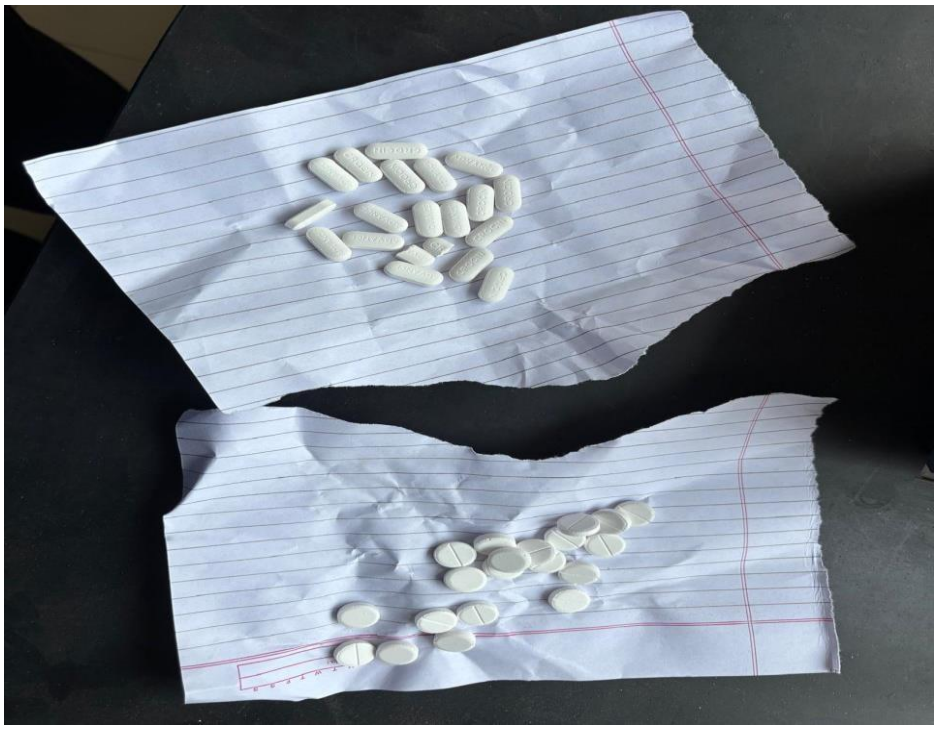

Fig no . 1 general appearance

WEIGHT VARIATION TEST

The weight variation test is performed to check the uniformity of weight of tablets. It ensures that each tablet contains the proper amount of drug substance and excipients. This test is an important quality control parameter for tablet formulations.[25]

Formula

$$\%\text{Weight Variation} = \frac{\text{Individual Weight} - \text{Average Weight}}{\text{Average weight}} * 100$$

Table [2]

Sr. No.	Weight of Tablet A (mg)	Weight of Tablet B (mg)
1	575mg	556mg
2	573mg	554mg
3	581mg	559mg
4	581mg	556mg
5	571mg	558mg
6	576mg	560mg
7	581mg	563mg
8	581mg	557mg
9	583mg	559mg
10	570mg	555mg
11	569mg	550mg
12	567mg	565mg

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13	582mg	554mg
14	581mg	563mg
15	581mg	553mg
16	576mg	559mg
17	580mg	560mg
18	585mg	558mg
19	580mg	554mg
20	581mg	556mg
Average	577.70mg	557.70mg

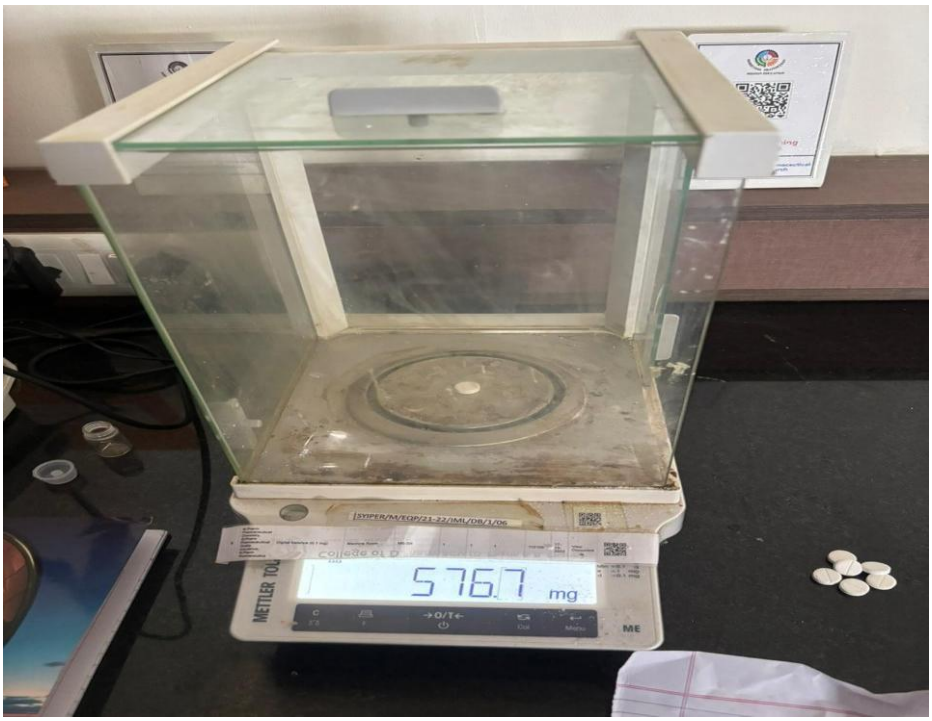

Fig no 3 weight verisoion

HARDNESS TEST

The hardness test is performed to determine the mechanical strength of tablets. It indicates the ability of tablets to withstand handling, packaging, transportation, and storage without breaking or cracking.[25]

Table [3]

Sr.no	Tablet A (kg/cm^2)	Tablet B(kg/cm^2)
1	9	8
2	4	10
3	10	8
4	4	6
5	7	7
Average	6.8	7.8

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Fig4. Hardness Tester

FRIABILITY TEST

The friability test is performed to determine the ability of tablets to resist abrasion, chipping, and breaking during handling, packaging, and transportation. It measures the mechanical strength of tablets under stress conditions.[25]

Table [4]

parameters	Tablet A	Tablet B
Initial weight(g)	557.70	577.70
Final weight(g)	553.25	572.25
% friability	0.80%	0.94%
result	Pass	pass

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Fig no 5 frability test

DISINTEGRATION TEST

The disintegration test is performed to determine the time required for tablets to break down into smaller particles when placed in a suitable liquid medium under specified conditions. This test ensures that the tablet disintegrates properly after administration for effective drug release.[25]

Table [5]

Sr.no	parameter	Tablet A	Tablet B
1	Drug	Dolo 500 mg	Cronic 500mg
2	Medium	Water at 37°C	Water at 37°C
3	Apparatus	USP Disintegration Apparatus	USP Disintegration Apparatus
4	Observed DT	4 min 20 sec	6 min 10 sec
5	Official limit	NMT 15min	NMT 15min
6	result	pass	pass

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Fig no . 6 Disintegration Test

DRUG CONTENT/ASSAY

The drug content assay is performed to determine the amount of active pharmaceutical ingredient present in the tablet formulation. In this study, the assay of marketed Dolo 650 tablets was carried out using the UV spectrophotometric method.[25]

Table [6]

Concentration	Absorbance
1 ml	0.305
2 ml	0.450
3 ml	0.680
4 ml	0.759
5 ml	0.899

.Calibration curve of paracetamol by UV Spectrophotomerty

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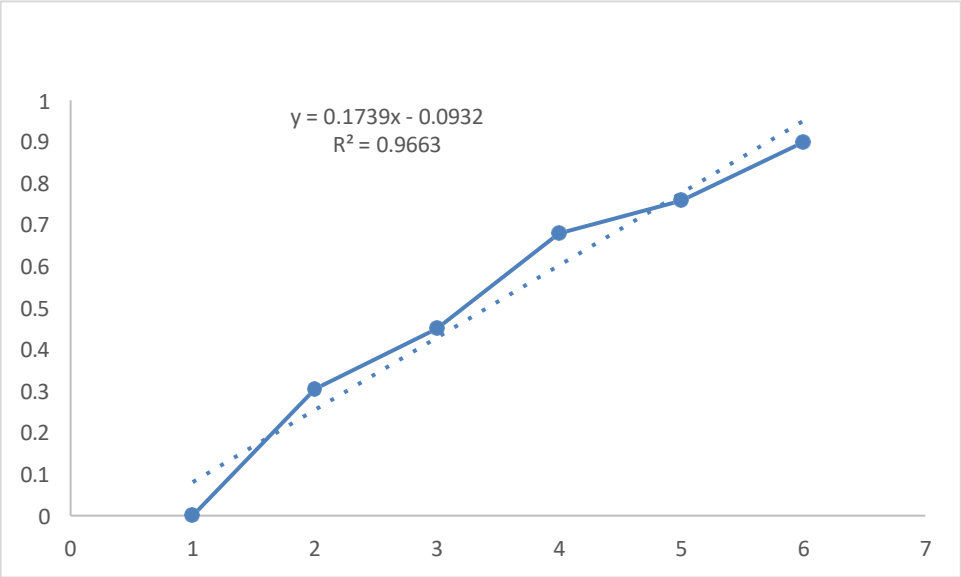

Concentration (uM)

DISSOLUTION TEST

The dissolution test is performed to determine the rate and extent of drug release from tablet formulations into the dissolution medium. This test helps in evaluating the drug release behavior and bioavailability of the marketed tablets.[25]

Principle

When the tablet is placed in the dissolution medium, the active drug dissolves gradually. The amount of drug released at specific time intervals is measured using a UV spectrophotometer[25].

Table [6]

Time (min)	Dolo 500 mg (Drug Release)	Crocin 500 mg (Drug Release)
5	210mg	190mg
10	325mg	300mg
15	410mg	390mg
20	455mg	440mg
30	490mg	475mg

Calculation of % Drug Release

Formula

$$\% \text{ Drug Release} = \frac{\text{Amount of drug released}}{\text{Label claim}} * 100$$

VII. RESULT

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Time (min)	Dolo 500 mg (% Drug Release)	Crocin 500 mg (% Drug Release)
5	42%	38%
10	65%	60%
15	82%	78%
20	91%	88%
30	98%	95%

Fig.6 Dissolution Test

Observation

Both marketed Dolo 650 tablet formulations showed satisfactory drug release profiles and released the required amount of drug within the specified time.

Result

Comparative Evaluation Summary

The present study was carried out to compare two marketed formulations of Dolo 650 tablets by performing various official evaluation tests. Different quality control parameters such as general appearance, weight variation, hardness, friability, thickness, drug content assay, disintegration test, and dissolution test were evaluated according to pharmacopoeial standards.[25]

Both marketed tablet formulations showed satisfactory physical appearance with uniform color, shape, and surface texture. The weight variation test confirmed uniformity in tablet weight, indicating proper manufacturing and compression process. Hardness and friability studies demonstrated adequate mechanical strength and resistance to breakage during handling and transportation.[25]

The thickness test showed uniform tablet dimensions in both formulations. Drug content assay performed by UV spectrophotometric method confirmed that both tablet brands contained the required amount of paracetamol within acceptable pharmacopoeial limits. Disintegration studies revealed that both formulations disintegrated within the specified time limit, ensuring proper drug release behavior.[25]

Dissolution studies indicated satisfactory release of paracetamol from both marketed formulations within the prescribed time. Overall, the results obtained from all evaluation parameters were found to comply with Indian Pharmacopoeial standards.[25]

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Comparavtive evalution observation table

Test parameter	Official limit	Dolo500mg	Cronic 500mg	Result
Appearance	uniform	White, round	White ,oval	Pass
Avearage Weight	5 % deviation	577.70 mg	557.70mg	Pass
Hardness	4 - 8 kg/cm^2	6.8(kg/cm^2)	7.8 (kg/cm^2)	Pass

Friability	NMT 1%	0.80%	0.94%	Pass
Disintegration	NMT 15 MIN	4min 20 sec	6min10 sec	Pass
Drug content assay	95 – 105%	99.7%	99.3%	Pass
Dissolution at 30 min	NLT 80 %	98%	95%	Pass

VIII. Conclusion

The comparative study of and tablets was successfully completed by performing different quality control tests such as appearance, weight variation, hardness, friability, disintegration test, drug content assay, and dissolution study.

The results showed that both tablets passed all official standards and limits. Both tablets had a uniform appearance, proper weight, good hardness, and low friability, which indicates good tablet strength and quality.

The disintegration test showed that both tablets disintegrated within the required time limit. Dolo 500 mg disintegrated slightly faster than Crocin 500 mg. The drug content assay confirmed that both tablets contained the correct amount of drug within acceptable limits.

The dissolution study showed that both tablets released the drug properly within 30 minutes, indicating good drug release properties.

From the overall study, it was concluded that both tablet brands have good quality and are suitable for use. However, Dolo 500 mg showed slightly better performance in disintegration and dissolution compared to Crocin 500 mg.

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