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DEVELOPMENT AND EVALUATION OF NATURAL SUPERDISINTEGRANT-BASED ORODISPERSIBLE TABLETS OF LOSARTAN POTASSIUM FOR MANAGEMENT OF HYPERTENSION

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ABSTRACT

In this study, the goal was to create and assess orodispersible tablets of losartan potassium using banana powder as a natural superdisintegrant alongside sodium starch glycolate, a synthetic superdisintegrant.The goal was to create a formulation that would break down quickly and make it easier for patients to follow the instructions, using a delivery method that was both cost-effective and easy for patients to use. The tablets were made with a single-punch tablet machine and the direct compression method. Seven batches were made in all (F1 to F7), each with a different amount of banana powder, sodium starch glycolate, or a mix of the two. Fourier Transform Infrared (FTIR) spectroscopy was used to confirm that losartan potassium and the chosen superdisintegrants worked well together. This was done on separate samples of losartan and banana powder, as well as their physical mixtures with sodium starch glycolate. All formulations underwent assessment for both pre-compression and post-compression characteristics, including parameters like tablet thickness, hardness, friability, weight consistency, disintegration time, wetting time, uniformity of drug content, and in-vitro dissolution performance. Among the tested batches, formulations F5 and F6—which combined banana powder with sodium starch glycolate in ratios of 4:1 and 1:1, respectively—stood out. These two formulations demonstrated rapid disintegration, robust mechanical strength, and an excellent drug release profile. The study found that natural banana powder works effectively as a superdisintegrant. It can be used by itself or mixed with synthetic substances to make efficient orally disintegrating tablets (ODTs).

Keywords: Hypertension management, Losartan potassium, Orodispersible tablets, Superdisintegrants - Natural and synthetic, Banana powder, Sodium starch glycolate, Direct compression

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1. Introduction

Hypertension is a chronic illness that necessitates long-term pharmaceutical treatment, which is often made difficult by poor patient compliance, particularly in elderly patients. Losartan potassium, a popular antihypertensive medication, has a low solubility and a bitter taste, which may limit its acceptability in traditional oral dose forms. Orodispersible tablets (ODTs) offer an appealing option as they quickly break down in the mouth, eliminating the need for water, thereby improving ease of administration and compliance. While synthetic superdisintegrants have been widely employed in ODT formulations, there is growing interest and demand in exploring natural alternatives due to their biocompatibility, cost-effectiveness, non-toxicity, and eco-friendliness. However, limited research has focused on the use of natural superdisintegrants in the formulation of ODTs containing losartan potassium. Moreover, the comparative efficiency of these natural agents against conventional superdisintegrants remains underexplored. This research aims to develop and assess orodispersible tablets containing losartan potassium utilising

natural superdisintegrants, looking into their effectiveness on tablet integrity, disintegration time, drug release, and taste. It is expected that the study would provide insights on the viability of using natural excipients in place of synthetic ones, ultimately contributing to the development of antihypertensive medications that are more patient-friendly and sustainable.

2. Materials and methods

2.1 Materials

Losartan was purchased from Dr. Reddy's Laboratories and banana powder was prepared in the college laboratory. All other reagents were of good grade.

2.2 Methodology

Drug identification/Pre formulation studies

2.2.1 Melting point

The sample is packed into a capillary tube, and as the temperature gradually increases, the point at which the substance starts to liquify is recorded[1]

2.2.2 Solubility

A magnetic stirrer was used to stir the solutions after a specific quantity of medication was added to each of the small vials that held one milliliter of each solvent[2]. A temperature controller was also used when needed. The undissolved losartan potassium particles were then retained when the above-stirred solution was filtered through filter paper. The weight of the filter paper containing undissolved losartan potassium particles was then subtracted from the weight of the filter paper after it had been allowed to dry.

$$Solubility\ \left(\frac{mg}{ml}\right) = \frac{Initial\ wt.of\ Losartan\ (mg) - Wt.of\ undissolved\ Losartan\ (mg)}{Volume\ of\ solvent\ (ml)}$$

2.2.3 UV spectrophotometric determination

A 10 µg/ml stock solution of losartan potassium was prepared in pH 6.8

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phosphate buffer. Number of dilutions from 1-10 µg/ml were prepared and diluted with phosphate buffer pH 6.8, and later, after absorbance was noted using a UV-visible spectrophotometer (Shimadzu, UV-1700). By scanning under the range of 200-400 nm using phosphate buffer pH 6-.8 as blank in a double beam spectrophotometer, the UV spectrum was obtained[3].

2.2.4 IR Spectroscopy for checking the compatibility of the drug with excipients

FTIR spectra of both pure losartan potassium and a physical combination of the drug and excipients (sodium starch glycolate and banana powder) were recorded.

An FTIR spectrophotometer was used to scan the wavelength range of 4000-400-1cm in order to capture the spectrum after the powdered drug sample and KBr mixture were placed in a sampler[4].

2.2.5 Compatibility studies of Losartan potassium and excipients used by physical observation

A physical mixture of losartan potassium and banana powder in the ratio 1:1 was prepared, and the colour of this physical mixture was evaluated before subjecting it to stability studies. After noting down the colour of the above physical mixture, this mixture was stored in closed vials and then put in the stability chamber. After that, accelerated conditions following a certain temperature were followed to check the integrity of the physical mixture. After a period of one month, the physical mixture was taken out of the stability chamber and then examined physically to see if any colour changes were seen[5,6].

2.2.6 Preparation of banana powder from unripe banana

The unripe banana powder (Musa paradisiaca L.) is prepared by following various steps to make sure that the banana powder does not lose its nutritional properties and remains stable. Firstly, the unripe bananas are peeled, and the pulp is cut into smaller pieces. These banana pulp slices are then cleaned thoroughly with distilled water to remove any soluble contaminants. To prevent microbiological contamination and increase shelf life, 0.2% w/w methyl paraben is used as a preservative. The cleaned banana slices are then formed into a fine, smooth paste using a household grinder. The paste formed is then dried in an oven for 24 hrs. at 45°C to obtain a constant weight, resulting in a decrease in moisture while keeping the vital nutrients. Once dry, the material is finely sieved through an 80-mesh sieve to ensure all particles are of the same size[7].

2.2.7 Characterisation of banana powder Organoleptic properties

The sensory characteristics of the banana powder, including taste, odor, and color, were evaluated through visual and sensory analysis. The taste was assessed using the tongue, the color and texture were observed

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visually, and the odour was examined using the sense of smell.

Flow properties

The flow characteristics of the banana powder were analysed using bulk and tapped density values.

Phytochemical screening

A qualitative assessment was performed to detect and confirm different phytochemicals present in banana powder.Different tests were conducted to confirm the presence of specific chemical compounds.

Swelling capacity

Swelling capacity was determined as a percentage using the following calculation: Swelling capacity (%) = (Xv / Xi) × 100, where Xv is the volume the material occupies after swelling for 24 hours, and Xi is the original volume of the powder in the measuring cylinder.

Determination of pH

A 1% solution of banana powder in water was made, and its pH was measured using an electronic pH meter.

Determination of loss on drying

One gram of the polymer powder was accurately weighed and then heated in a drying oven at 105°C for five minutes. The sample was weighed both before and after drying, and the percentage of moisture lost was determined based on the difference in weights.

Determination of viscosity

One gram of dried, finely ground banana powder was dispersed in distilled water and the total volume was adjusted to 100 mL. The resulting mixture was thoroughly blended with a mechanical stirrer to ensure uniformity. The viscosity of this suspension was then measured using a Brookfield viscometer equipped with the appropriate spindle[8].

2.2.8 Fabrication of tablets

The direct compression method was incorporated to produce the ODTs of losartan potassium by utilising the novel co-processed superdisintegrants sodium starch glycolate and banana powder, which causes rapid action and improved bioavailability[9]. In this method mortar and pestle were used to blend the different ratios of drug, superdisintegrants and excipients. Before blending the drug and the superdisintegrants were sieved through a mesh and then compressed by a tablet punching machine, using the direct compression method. This technology is versatile, scalable, and adaptable to a range of drugs.

Table 1: Formulation of orodispersible tablets of Losartan potassium

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Ingredients	F1	F2	F3	F4	F5	F6	F7
Losartan potassium	25	25	25	25	25	25	25
Banana powder	12	16	20	_	_	_	_
Sodium starch glycolate	_	_	_	8	_	_	_
Banana power + sodium starch glycolate	_	_	_	_	16 + 4	10 + 10	4 + 16
Mannitol	105.8	101.8	97.8	109.8	97.8	97.8	97.8
Microcrystalline cellulose	40	40	40	40	40	40	40
Sodium saccharine	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Magnesium stearate	10	10	10	10	10	10	10
Talc	4	4	4	4	4	4	4
Flavour	2	2	2	2	2	2	2

Evaluation parameters

PRECOMPRESSION PARAMETERS

Angle of Repose

The powder blend was carefully funneled into a vertically positioned conical flask, allowing it to accumulate until it reached its maximum cone height[10]

$\text{Tan}\Theta = h/r$

Θ = Angle Of repose, h = Height of cone, r = Radius of the cone base

Bulk Density

The mass of a powder divided by the bulk volume is defined as bulk density.

Bulk density = w/v_b

Where, w = mass of powder, vb=bulk volume.

Tapped Density

It is the ratio of the powder mass to occupied volume by the powder after being tapped for a certain period. The powder mass in the measuring cylinder was tapped using the tapped density apparatus[11].

Tapped density = weight of powder blend/Tapped volume of packing.

Hausner's Ratio

The Hausner Ratio is defined as the quotient of a powder's tapped density to its bulk (apparent) density.

Hausner's Ratio= $\rho b / \rho t$

Where:

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Tapped Density (ρt) = Powder density after tapping (g/mL or g/cm³).
Bulk Density (ρb) = Powder density in its loose, untapped state (g/mL or g/cm³).

Carr's Compressibility Index

It is a widely used parameter to assess powder flowability and its suitability for capsule filling[12].

Carr's Index= $\frac{\rho t}{\rho b} \times 100$

Where:

Tapped Density (ρt) = Density of the powder after tapping.

Bulk Density (ρb) = Density of the powder in its loose state.

POSTCOMPRESSION PARAMETERS

Visual appearance

The tablets were visually inspected for their color and surface in both natural and artificial light[13].

Thickness

The measurement is carried out with Vernier caliper, where the tablet's diameter is read directly from the instrument's scale.

Hardness

To determine the tablet's strength and its ability to handle the pressure during the packaging, transportation and handling, a hardness test is performed by using a Monsanto Hardness Tester or Pfizer Hardness Tester.

Weight variation

To identify the uniformity in tablet weight, this test is performed. In this, tablets are selected randomly from different batches and weighed.

Drug content

A tablet from each formulation was taken and crushed to form powder blend in mortar and pestle. 5mg powder was taken to small quantity of ethanol and dissolved in it, and then filtered. It was then diluted in standard flask to 10 ml. UV visible spectrophotometer was then used to measure the absorbance of the solution made[14].

Wetting time

A piece of tissue paper cut in the shape of a petri dish was placed in it and filled with 6 ml of distilled water. From all F1-F7 formulations, a tablet was taken from each and placed in each petri dish and was observed for the water uptake completely up to each tablet's surface, which was recorded as the wetting time[15]. A water-soluble dye such as amaranth can be used to spot the colour during wetting.

Water absorption ratio

A tissue paper, trimmed to fit the base of a petri dish, was placed inside and saturated with 6 mL of distilled water. The tablet was then set on the moistened tissue to ensure it became fully wet. Afterward, the tablet's weight was measured. The water absorption ratio (R) was calculated using the appropriate formula[16].

$R = W_a - W_b / W_b \times 100$

In-vitro dispersion time

This can be determined by placing the tablets into a measuring cylinder filled with purified water, without using a disc, and maintaining the temperature at 25 ± 2°C, and the disintegration time for each tablet is observed and an average of disintegration time is noted down[17].

In-vitro disintegration studies

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The disintegrating apparatus filled with distilled water at 37°C was placed with ODTs to check the disintegration time, and then recorded disintegration time for each tablet which must be within 3 minutes for each ODT, and those will be considered passed[18].

In-vitro dissolution studies

For the in-vitro dissolution testing of ODTs, 900 mL of phosphate buffer at pH 6.8 was prepared and maintained at 37 ± 0.5 °C. The test was conducted using a paddle apparatus (USP Apparatus 2) set to 50 rpm. At specified time points—5, 10, 15, 20, 30, 45, and 60 minutes—1 mL samples were withdrawn from each vessel. After each withdrawal, an equal volume of fresh Sorenson buffer was added to maintain the original volume. A UV spectrophotometer at 234 nm was utilised for the sample analysis[19].

Stability studies

The temperature was maintained at 40±2ºC and 75±5% RH for 3 months as per ICH guidelines for stability conditions[20]. The tablets were subjected to various parameters for evaluation, such as disintegration, dissolution, hardness, friability, drug content, and organoleptic properties at an interval of a month.

3. Results

3.1 Results of preformulation studies

Solubility

The solubility of losartan potassium in various solvents and is illustrated graphically in Fig. 1

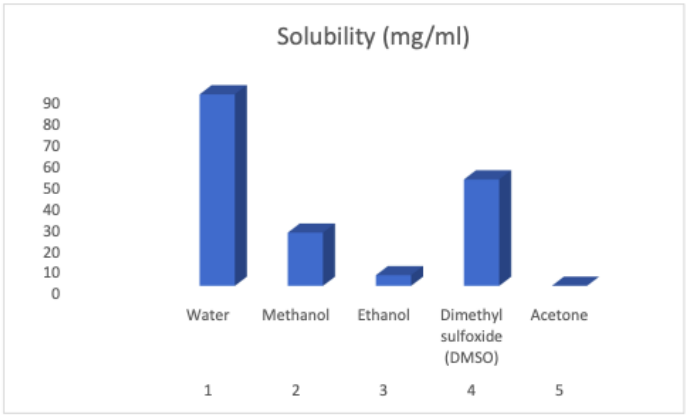

Fig. 1 Graphical illustration of solubility profile of losartan potassium

Melting point

Using the capillary method, losartan was found to melt at 264°C.

UV spectrophotometric determination

It was discovered that the maximum wavelength (λ max) is 234 nm. In Figure 2, we present the calibration curve for losartan potassium and its spectrum. In a phosphate buffer at pH 6.8, the UV spectrum of losartan potassium is given in figure 3.

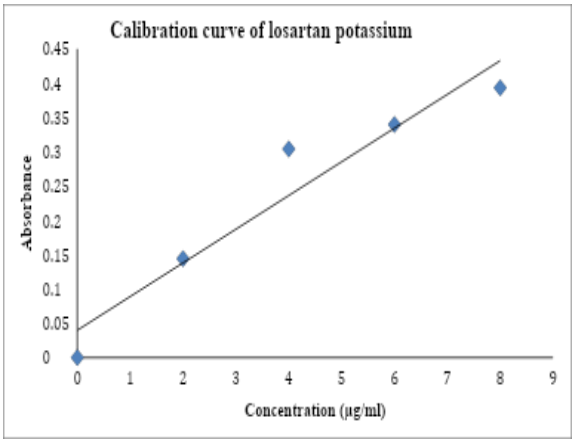

Fig. 2 Calibration curve of losartan potassium in phosphate buffer pH 6.8

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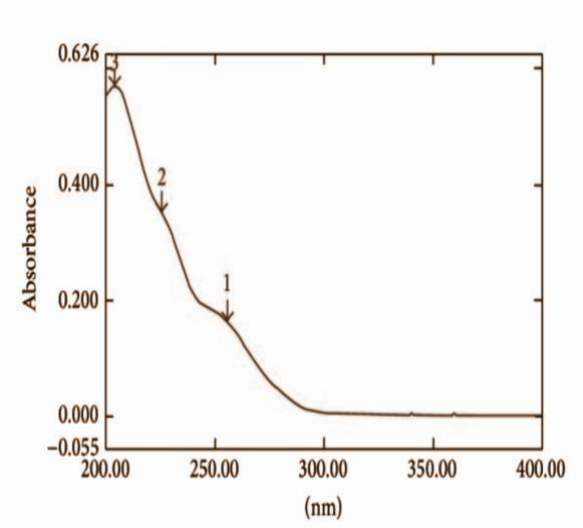

Fig. 3 UV spectrum of losartan potassium in phosphate buffer pH 6.8

IR Spectroscopy for checking compatibility of the drug with excipients

The spectrum of Losartan potassium displays prominent peaks confirming the presence of key functional groups such as tetrazole, amide, carboxyl, aromatic, and aliphatic chains. These findings align with the known chemical structure of Losartan.

The presence of characteristic bands without any unexpected peaks confirms the identity and purity of the drug substance. This spectrum was used as a reference in the subsequent drug-excipient compatibility study. The spectrum confirms the presence of characteristic peaks of polysaccharides, such as strong O–H stretching, C–H stretching, and prominent C–O and C–C stretching vibrations. These are consistent with the chemical structure of starch and other natural carbohydrates present in banana powder.

There are no unexpected peaks indicating foreign functional groups or chemical instability. Thus, the FTIR data confirms that the banana powder is chemically suitable and compatible for use as a natural excipient in pharmaceutical formulations.

The results confirm the presence of all characteristic peaks of the drug and excipients. No significant shifts, disappearance, or formation of new peaks were observed in the combined spectrum compared to the individual components. This indicates the absence of any significant chemical interaction among Losartan potassium, banana powder, and sodium starch glycolate.

Therefore, the components are considered compatible, and the formulation is stable with respect to the functional groups evaluated by FTIR spectroscopy.

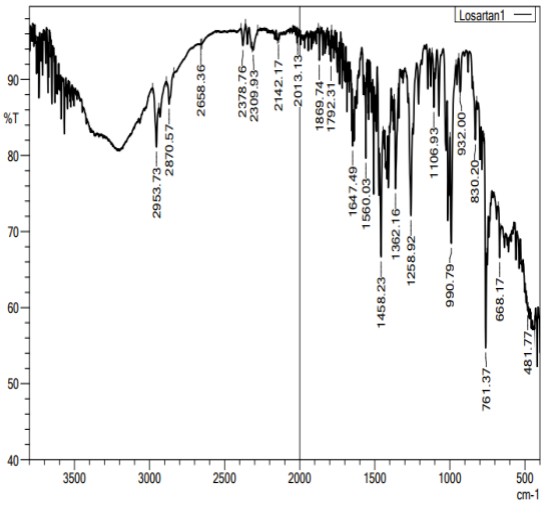

Fig. 4 IR spectrum of Losartan Potassium

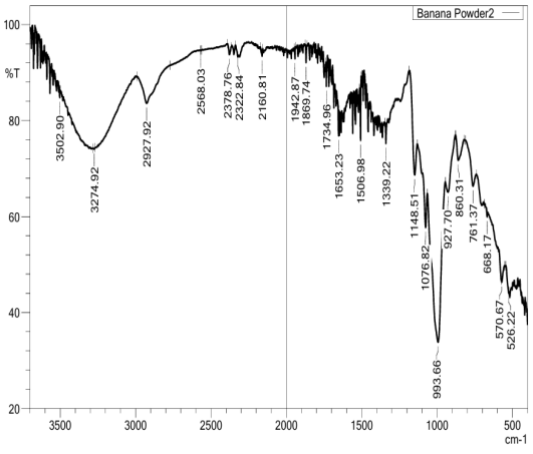

Fig. 5 IR spectrum of Banana Powder

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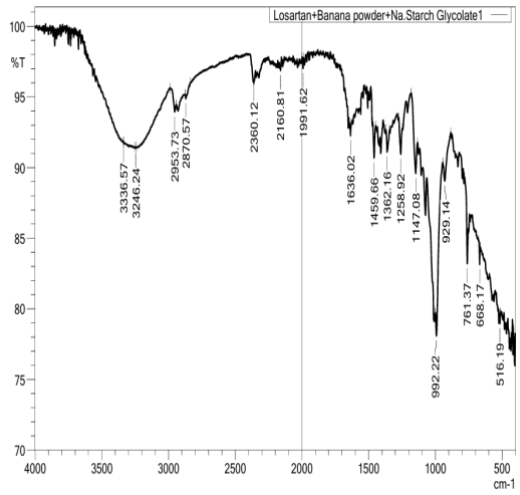

Fig. 6 IR spectrum of mixture of Losartan, Banana Powder and Sodium starch glycolate

Compatibility studies of Losartan and excipients used by physical observation

The mixture between losartan and its excipients showed no color changes or any indication of physical incompatibility.

Characterisation of banana powder

Organoleptic properties.

The colour of the banana powder was yellow, texture was smooth and fine and possess flour like aroma with slight sweet taste. The organoleptic properties of banana powder were favourable and aesthetically appealing.

Flow properties

Tests revealed that the bulk density measuring 0.89 g/cm³ along with tapped density at 1 g/cm³. The calculation of Hausner's ratio using measured bulk and tapped density yielded a value of 1.12 which indicates good characteristics of the material. The measured Carr's compressibility index reached 11 which indicates outstanding low behavior. A measurement of angle of repose at 28 degrees indicates excellent flow performance. Banana powder demonstrates suitable flow characteristics and compressibility which makes it applicable for use in direct compression manufacturing methods.

3.3 Phytochemical screening

The result obtained after preliminary phytochemical screening was found to be as follows in table 2.

Table 2 Phytochemical analysis of banana powder

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S.No.	Phytochemical compounds	Result	Inference
1.	Saponins	Product of foam	Saponins present
2.	Tannins	Production of yellow colour	Tannins absent
3.	Amino acid	Production of white colour	Amino acids absent
4.	Carbohydrate	Production of white colour	Carbohydrate absent
5.	Alkaloids	Production of orange-brown precipitates	Alkaloids present
6.	Flavonoids	No change in colour	Flavonoids absent
7.	Complex carbohydrates	Production of dark blue colour	Starch present
8.	Protein	Production of blue colour	Proteins present

Swelling capacity

The measurement of banana powder swelling revealed a capacity of 1.8.

Determination of pH

The pH level measured was just under 7, around 6.7.

Determination of Loss on drying

% loss on drying was found to be 5.5

Determination of viscosity

The viscosity was found to be 8.09 cps.

3.3 Results of evaluation parameters

PRECOMRESSION PARAMETERS

Angle of Repose

Different powder blends (F1-F7) produced angle of repose values which ranged from 25 to 30, indicating their flow characteristics from excellent to fair.

Bulk Density

The bulk density for the different blends from F1 to F7 ranged between 0.55 and 0.64 g/cm³.

Tapped Density

The tapped density for the blends from F1 to F7 was found to be between 0.65 and 0.74 g/cm³.

Hausner's Ratio

The Hausner ratio, which compares bulk density to tapped density, was calculated for the powder blends F1 to F7. With values between 1.16 and 1.20, these blends showed good flow properties.

Carr's Compressibility Index

Carr's Compressibility index values for the 7 powder blends are in the range of 13.5 to 16.4 and indicates that they are favorable for flow characteristics. Summary of the prepared powder blend precompression

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characterization parameters is listed in Table 3.

POST COMPRESSION PARAMETERS

Visual appearance

Upon checking, the tablets appeared uniformly round with no roughness observed on their surface.

Thickness

After measuring the thickness of the prepared batches F1-F7 with Vernier callipers, the recorded values were 2.4 ± 0.1, 2.3 ± 0.12, 2.5 ± 0.1, 2.5 ± 0.11, 2.7 ± 0.13, 2.6 ± 0.12, and 2.90 ± 0.1 mm, respectively.

Hardness

Hardness values for the various batches that were prepared were 3.11, 3.08, 3.04, 3.06, 3.09, 3.10 and 3, and all these values were within the acceptable range.

Weight variation

The study showed that the weight variation of tablets normally adhered to the good range, however, there were two tablets (F3 and F7) that deviate from the defined limits. Simply put, this means that the tablets produced ranged from ± 7.5 percent of the mentioned weight specification of tablets with weights of 84 mg to 250 mg

Friability

The friability value of the formulations was between 0.56% and 0.62%, which is within acceptable range, as found after analysis. It shows that the produced batches were able to meet the criteria of friability.

Drug content

The amount of medicine in the tablets ranged from 96.9% to 99.27%. Among all the batches, F5 had the highest drug content. The drug content in prepared batches F1-F7 was found to the range of 96.90%-99.20%.

Wetting time

The prepared batches' wetting time can range from 21 to 80 seconds. Therefore, the wetting time increased with higher concentration of the superdisintegrant part used.

Water absorption ratio

The water absorption ratio values were found between 67-95%. The F5 formulation, containing 16 mg banana powder and 4 mg sodium starch glycolate, and the F6 formulation, containing 10+10 mg of banana powder and sodium starch glycolate, so F5 and F6 had the highest water absorption ratio as they contained the highest amount of banana powder.

In-vitro dispersion time

The in-vitro dispersion times of all the developed batches were within the limits set by the standard as they ranged from 25 to 75 seconds. Dispersion times of the in vitro tablets produced were inversely proportional to the amount of superdisintegrant used. The formulation F5 and F6 showed the quickest in-vitro dispersion time, which translates to faster

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tablet dispersion. The in-vitro dispersion times of the various formulation batches F1-F7 are depicted in Figure 7.

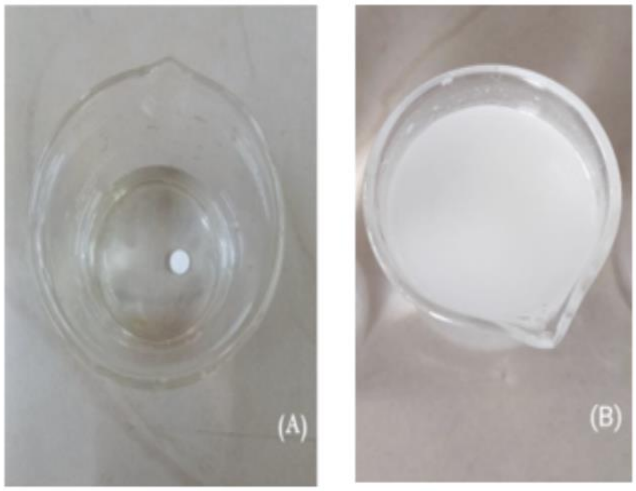

Fig. 7 In-vitro dispersion time study of formulated ODTs (A) Before dispersion; (B) After dispersion

Table 3 Precompression characterization parameters of prepared powder blends

Formulation code	Direct compression method				
	Angle of repose (°)	Bulk density (gm/cm^3)	Tapped density (gm/cm^3)	Hausner's Ratio	Carr's Compressibility Index
F1	28	0.56	0.67	1.20	16.4
F2	29	0.58	0.68	1.17	14.7
F3	30	0.55	0.65	1.18	15.4
F4	27	0.60	0.70	1.16	14.3
F5	25	0.62	0.72	1.16	13.9
F6	26	0.63	0.73	1.16	13.7
F7	26	0.64	0.74	1.16	13.5

Table 4 Post-compression characterization parameters

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Formulation code	Visual appearance	Thickness (mm)	Hardness (kg/cm^2)	Weight variation (mg)	Friability (%)	Drug content (%)
F1	White, round and no irregular surface	2.4±0.1	3.00±0.24	200	0.62	96.9
F2	White, round and no irregular surface	2.3±0.12	3.05±0.20	201	0.54	97.92
F3	White, round and no irregular surface	2.5±0.1	3.02±0.22	183	0.55	98.1
F4	White, round and no irregular surface	2.5±0.11	3.08±0.21	199	0.57	98.27
F5	White, round and no irregular surface	2.7±0.13	3.12±0.23	202	0.56	99.2
F6	White, round and no irregular surface	2.6±0.12	3.10±0.25	203	0.60	97.29
F7	White, round and no irregular surface	2.9±0.1	2.95±0.19	20	0.59	98

In-vitro disintegration studies

All the batches of tablets broke apart in lab tests within 20 to 73 seconds, meeting the required standards. The results showed that the more superdisintegrant was added, the faster the tablets disintegrated. Formulations F5 (with 16 mg banana powder and 4 mg sodium starch glycolate) and F6 (with equal parts banana powder and sodium starch glycolate) had the quickest disintegration times, meaning these tablets fell apart the fastest. The in-vitro disintegration times of the different formulation batches F1 to F7 and the formulated ODTs before and after are also shown in Fig. 8.

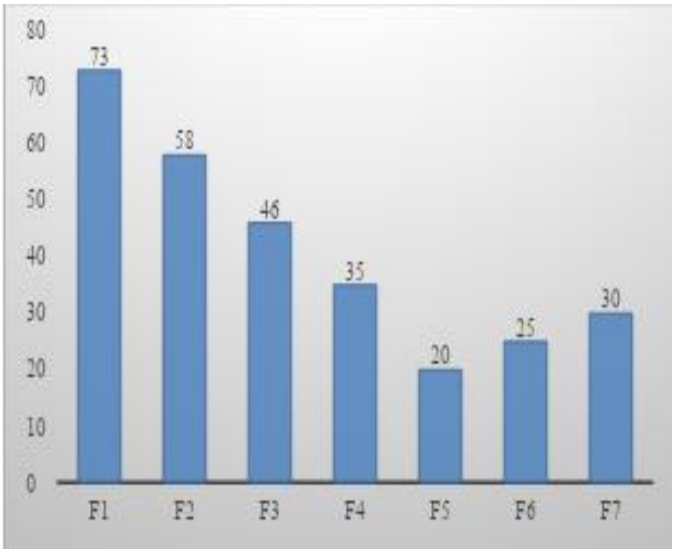

Fig. 8 Illustration depicting in-vitro disintegration of formulations F1-F7

Values of other post-compression parameters are given in Table 5.

Table 5 Other Postcompression characterization parameters

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Formulation code	Wetting time (s)	Water absorption ratio (%)	Dispersion time (s)	Disintegration time (s)
F1	30	66.7	75	73
F2	29	65	60	58
F3	28	71.4	50	46
F4	26	76.9	38	35
F5	21	95.2	25	20
F6	23	87	30	25
F7	24	83.3	35	30

In-vitro dissolution studies

The amount of medicine released from tablet formulas F1 to F7 was measured over 60 minutes, with samples taken at several time points. Among all the formulas, F5 and F6—made with banana powder and sodium starch glycolate in 4:1 and 1:1 ratios—showed the best results. After an hour, both F5 and F6 released over 91% of the drug, with F6 reaching about 92.45%, showing they were especially effective at delivering the medicine. In an attempt to summarize the cumulative drug release percentages, Fig. 9 is displayed in graphical format as an illustration of the in-vitro disintegration times of the different formulation batches F1–F7.

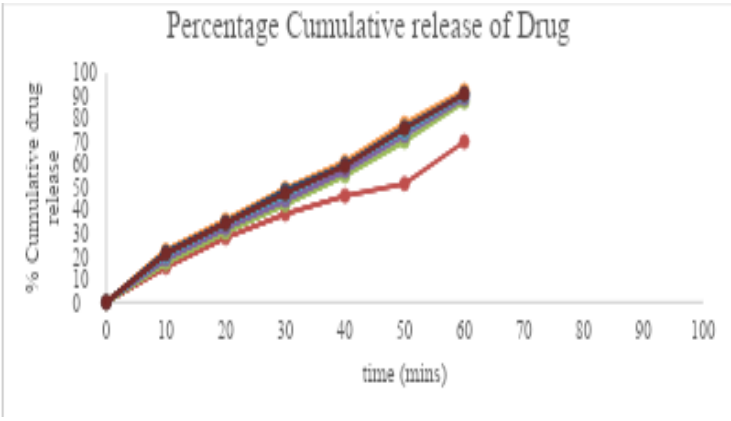

Fig. 9 Illustration depicting in-vitro percentage cumulative drug release from formulations F1-F7

Stability studies

Over the three months, there were no major changes in any of these qualities.

4. Discussion

No change in colour and incompatibility was noticed during the physical incompatibility study. The colour of banana powder was yellow, with a smooth and fine texture, flour-like smell, and sweet taste during its organoleptic evaluation. Banana powder showed the presence of flavonoids, starch, alkaloids and proteins as a result of its phytochemical screening. Other parameters like pH, swelling capacity, and LOD showed positive results for the use of banana powder as a superdisintegrant. The bulk and tapped densities were also found within a favourable range, which suggests that banana powder consists of good compressibility. The hardness ranges from 3-3.12. Upon weight variation determination, one tablet seemed to be deviated from the range, and the rest were in the standard range of 7.5% for tablets weighing from 84-250 mg. 0.54-0.62% was the friability value, which is under the limit range of less than 1%and batches were passed in the friability test. Water absorption ratios were 67-95%, and 21-30

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secs was the wetting time for prepared batches. The tablets broke apart in lab tests within 20 to 73 seconds. The amount of medicine in each batch ranged from about 96.9% to 99.2% of what was expected. The F5 and F6 formulations containing 16+4 mg and 10+10 mg banana powder and sodium starch glycolate had least dispersion time and the highest water absorption ratio. Among both, F5 was the best due to the high quantity of banana powder. Overall, among all batches, these two showed the best results.

5. Conclusion

In the current study, natural superdisintegrant banana powder and commercially available superdisintegrant sodium starch glycolate were used to successfully create ODTs of Losartan potassium, an ARB inhibitor family of hypertension medication. Both superdisintegrants were made in seven batches with different concentrations. The results obtained show that the natural superdisintegrant banana powder is better than sodium starch glycolate, a superdisintegrant that is sold commercially. Looking at features such as how quickly the tablet gets wet, how fast it breaks apart and spreads in a test environment, and how it dissolves and disintegrates over time, the batches made with natural superdisintegrant and those that combined natural and commercially available superdisintegrant showed the good results.

The developed ODTs can easily be produced on a large scale because they were made using a simple direct compression method. Losartan potassium ODTs can ensure a timely onset of action for hypertensive patients while simultaneously enhancing the drug's efficacy and bioavailability. Therefore, the developed ODTs can be further studied for in vivo factors and have great potential for treating hypertension.

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