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Research Article

Formulation and Evaluation of Herbal Tablets for Cancer

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ABSTRACT

The present study aimed to formulate and evaluate herbal tablets intended for supportive cancer therapy using the direct compression method. Medicinal plant powders were blended with suitable pharmaceutical excipients and compressed into tablets. The powder blend was evaluated for pre-compression parameters including bulk density, tapped density, angle of repose, Carr's index, and Hausner ratio. The compressed tablets were assessed for post-compression parameters such as weight variation, hardness, friability, thickness, disintegration time, drug content uniformity, and dissolution profile. The results demonstrated satisfactory flowability and compressibility of the powder blend. The prepared tablets exhibited acceptable pharmaceutical characteristics, including adequate mechanical strength, uniform drug content, and satisfactory dissolution behaviour. The study concludes that the developed herbal tablets possess suitable quality attributes and may serve as a promising dosage form for supportive management in cancer therapy

INTRODUCTION

Cancer remains one of the leading causes of mortality worldwide and is associated with significant physical and psychological burden. Along with conventional treatments such as chemotherapy, radiotherapy, and surgery, supportive therapies are increasingly being explored to improve patient quality of life and reduce treatment-associated complications.

Herbal medicines have gained considerable attention due to their natural origin, therapeutic potential, and comparatively lower adverse effects. Several medicinal plants contain bioactive phytoconstituents with antioxidant, immunomodulatory, anti-inflammatory, and

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cytoprotective properties that may support cancer patients during treatment.

Tablet dosage forms offer advantages such as accurate dosing, convenience, stability, and patient compliance. Therefore, the present study was undertaken to formulate herbal tablets using the direct compression technique and evaluate their pharmaceutical properties.

2. Materials and Methods

2.1 Preparation of Herbal Tablets

The herbal tablets were prepared by the direct compression method. The required quantities of medicinal plant powders and pharmaceutical excipients were accurately weighed and mixed uniformly. The blend was evaluated for pre-compression characteristics and subsequently compressed into tablets using a tablet compression machine.

2.2 Pre-Compression Evaluation

The powder blend was evaluated for:

- Bulk Density
- Tapped Density
- Angle of Repose
- Carr's Compressibility Index
- Hausner Ratio

2.3 Post-Compression Evaluation

The prepared tablets were evaluated for:

- Appearance
- Weight Variation
- Thickness
- Hardness
- Friability
- Disintegration Time
- Drug Content Uniformity
- Dissolution Study

3. Results and Discussion

3.1 Pre-Compression Evaluation

The results of pre-compression studies are presented in Table 1.

Table 1. Pre-Compression Parameters of Herbal Powder Blend

Parameter	Result	Interpretation
Bulk Density	0.42 g/cm³	Acceptable
Tapped Density	0.50 g/cm³	Acceptable
Angle of Repose	28°	Good Flow Property
Carr's Index	16%	Good Compressibility
Hausner Ratio	1.19	Good Flowability

Discussion

The powder blend exhibited satisfactory flow and compressibility characteristics. The angle of repose value of 28° indicated excellent flow behaviour, facilitating uniform die filling during compression. Carr's index of 16% and Hausner ratio of 1.19 confirmed acceptable compressibility and flowability. These results demonstrated the suitability of the powder blend for direct compression without additional processing.

3.2 Post-Compression Evaluation

The results of tablet evaluation are summarized in Table 2.

Table 2. Post-Compression Parameters of Herbal Tablets

Parameter	Result	Observation
Colour and Appearance	Uniform	Acceptable
Average Weight	480 mg	Within Limits
Thickness	4.5 mm	Uniform
Hardness	4.8 kg/cm²	Adequate Strength
Friability	0.62%	Less than 1%
Disintegration Time	12 min	Acceptable
Drug Content Uniformity	97.5%	Within Limits
Dissolution	92% Drug Release	Satisfactory

DISCUSSION

The prepared tablets exhibited uniform appearance without visible defects such as capping, chipping, or cracking. The average weight and thickness remained within acceptable limits, indicating consistent compression and uniform die filling.

The hardness value of 4.8 kg/cm² suggested sufficient mechanical strength to withstand handling and transportation. Friability was found to be 0.62%, which is below the acceptable pharmacopoeial limit of 1%, confirming good resistance to abrasion.

The tablets showed a disintegration time of 12 minutes, ensuring timely release of active phytoconstituents. Drug content uniformity of 97.5% indicated homogeneous distribution of herbal ingredients throughout the formulation. The dissolution study demonstrated 92% drug release, reflecting efficient release of active constituents from the tablet matrix.

Overall, the results confirmed that the formulated herbal tablets possessed desirable pharmaceutical qualities and satisfactory performance characteristics.

4. CONCLUSION

The present study successfully formulated herbal tablets for supportive cancer therapy using the direct compression method. The powder blend exhibited acceptable flowability and compressibility, while the compressed tablets demonstrated satisfactory physical and pharmaceutical properties. The formulation showed good mechanical strength, acceptable disintegration, uniform drug content, and efficient dissolution behavior. These findings suggest that the developed herbal tablets have potential as a supportive therapeutic dosage form and may be considered for further pharmacological and clinical investigations.

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