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Formulation and Evaluation of Sustained-release Tablets of Diclofenac Sodium Using Locust Bean Gum as a Natural Disintegrant and Evaluation of Various Parameters

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***SUMMARY*. To increase the drug's bioavailability and patient compliance, the current study project aims to develop sustained-release Diclofenac sodium tablets, assess the formulation using a range of characteristics, and analyze fast-dissolving Diclofenac sodium tablets. Using disintegrants locust bean gum (LBG) in seven different concentrations, fast-dissolving diclofenac sodium tablets were made using the direct compression method. The medication and LBG mixture were combined with additional excipients, and the tablets were then crushed using a direct compression method. Pre-compression and post-compression characteristics, as well as FTIR, were used to characterize the designed tablets. The pH 6.8 phosphate buffer was used for the in vitro drug release experiments. FTIR analysis of the prepared tablets revealed no interactions between the pure medication and the disintegrant. The medication was stable in the finished tablet formulation, according to the FTIR analysis. An assay was used to test the drug content. Pre- and post-compression parameters were assessed for seven (F1–F7) formulations, and all of the findings fell within the expected ranges. When treating inflammation, particularly in cases of severe pain, formulated dosage forms may be a useful substitute for standard dose forms.**

RESUMEN. Para aumentar la biodisponibilidad del fármaco y el cumplimiento del paciente, el proyecto de estudio actual tiene como objetivo desarrollar tabletas de diclofenaco sódico de liberación sostenida, evaluar la formulación utilizando una variedad de características y analizar tabletas de diclofenaco sódico de rápida disolución. Utilizando desintegrantes goma de algarroba (LBG) en siete concentraciones diferentes, se elaboraron tabletas de diclofenaco sódico de rápida disolución mediante el método de compresión directa. El medicamento y la mezcla de LBG se combinaron con excipientes adicionales y luego las tabletas se trituraron mediante un método de compresión directa. Se utilizaron características previas y posteriores a la compresión, así como FTIR, para caracterizar las tabletas diseñadas. Se utilizó tampón fosfato de pH 6,8 para los experimentos de liberación de fármacos in vitro. El análisis FTIR de las tabletas preparadas no reveló interacciones entre el medicamento puro y el desintegrante. El medicamento se mantuvo estable en la formulación de tableta terminada, según el análisis FTIR. Se utilizó un ensayo para probar el contenido de fármaco. Se evaluaron los parámetros previos y posteriores a la compresión para siete formulaciones (F1-F7) y todos los hallazgos se ubicaron dentro de los rangos esperados. Al tratar la inflamación, particularmente en casos de dolor intenso, las formas farmacéuticas formuladas pueden ser un sustituto útil de las formas farmacéuticas estándar.

KEYWORDS*:* diclofenac sodium, disintegrants, disintegration, dissolving tablets.

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