



**DESIGN, DEVELOPMENT & EVALUATION OF
Curcuma longa, *Zingiber Officinale* AND *Allium sativum*-
A POLYHERBAL PHARMACEUTICAL GEL
FOR RHEUMATOID ARTHRITIS**

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ABSTRACT

Rheumatoid Arthritis (RA) is an auto-immune disease which triggers degeneration of cartilage and is accompanied by pain, rigidity, and synovial inflammation. Many synthetic and semi synthetic drugs are regarded as a standard of care, considering there is no cure but due to their side effects patient restrict themselves from continue the drug therapy. According to currently available literature, certain herbs like *Curcuma longa*, *Zingiber officinale* and *Allium sativum* can aid in the treatment of such condition. Among other route of drug administration, because it avoids the gastrointestinal discomfort, first-pass effects, and metabolic breakdown linked to oral drug administration, the topical method of medicine delivery has gained popularity. Furthermore, they are less oily and may be readily removed from the skin's surface. The current study aimed to design a topical herbal gel incorporating herbs extract and to analyze its drug release potential. Three formulations were prepared via dispersion method and evaluated, each encompassing different proportion of herb extracts along with isopropyl alcohol, 1.5% Carbopol (940), tri-ethanol-amine, methyl paraben, propyl paraben, propylene glycol and sufficient amount of distill water. A number of characteristics were evaluated like colour, appearance, consistency, pH, Spreadability, Extrudability, and *in-vitro* drug release. The results obtained were encouraging and formulation containing *Curcuma longa*, *Allium sativum* and *Zingiber officinale* with 200mg of extract was found optimum for all parameters.

Keywords: RHEUMATOID ARTHRITIS , AUTO-IMMUNE DISEASE, *Curcuma longa*, *Zingiber officinale*, *Allium sativum*, EXTRUDABILITY

INTRODUCTION

Rheumatoid arthritis (RA) is an autoimmune disease that mostly affects the joints and is a chronic disorder. Pain, inflammation, and heat are frequently the outcomes. Pain and stiffness generally grow worse after resting. The wrist and the metacarpophalangeal joint are the two