

Preparation and Optimization of a Novel Disintegrating Golqand Pellets as a Traditional Persian Pharmacy Formulation: The Path to Be Embarked upon

Forough Afsari Sardari^a, Abdolali Mohagheghzadeh^b, Parmis Badr^{c,d}, Amir Azadi^{e*}

Authors' Affiliations:

a Student research committee, Student of Pharmacy, School of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran;

b Department of Phytopharmaceuticals (Traditional Pharmacy), Shiraz University of Medical Sciences, Shiraz, Iran;

c Phytopharmaceutical Technology and Traditional Medicine Incubator, Shiraz University of Medical Sciences, Shiraz, Iran;

d Pharmaceutical Sciences Research Center, Shiraz University of Medical Sciences, Shiraz, Iran.

e Department of Pharmaceutics, School of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran;

Abstract Presenter:

Forough Afsari Sardari; Pharmacy student; School of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran;

E-mail: f_afsaris @sums.ac.ir

*Correspondence:

Amir Azadi; PhD; Department of Pharmaceutics, School of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran;

E-mail: aazadi@sums.ac.ir

Introduction: Multi-particulate dosage form of pellet is formed by agglomeration of fine powdered drugs and excipients, leading to free flowing spherical particles. The multi-step process of extrusion & spheronization are mostly applied for preparation of uniformly-sized pellets. Golqand, a product of Traditional Persian Pharmacy containing *Rosa damascena* Mill petals is a heart and brain tonic, refresher, astringent, and a stomachic. It helps to improve appetite and relieves digestive diseases. Also, Golqand calms down nervous system. Based on traditional texts, it has been produced as a Jam-like preparation, imposing some difficulties in taking and dosing. In this study, we have prepared Golqand in pellet form, a novel solid dosage form and optimized this natural formulation.

Methods and Results: In this study, a 20 runs D-optimal method was applied as an experimental design to establish the optimum conditions for Golqand pellet preparation by extruder spheronizer equipment. The preparation process of pellets was optimized by a systematic multi-objective-optimization approach in terms of D-values for the particle size distribution (i.e. D10, D50 & D90) which are the intercepts for 10%, 50% and 90% of the cumulative mass obtained via sieving method.

The Model F-value of 6.58 implied the models were significant. There is only a 0.34% chance that a "Model F-Value" this large could occur due to noise. The R^2 , adjusted R^2 , predicted R^2 , and adequate precision for D50 model were calculated 82%, 72%, 46%, and 10.06, respectively which means that there is a good correlation between parameters and model.

Conclusions: In conclusion, presented models conducted us to prepare Golqand pellets with unimodal particle size distribution and pre-defined particle size. Applying pelletization method for Golqand preparation could resolve some critical challenges of natural formulations like taking similar doses.

Key words: Pellet, Extruder-Spheronizer, Golqand, *Rosa damascena* Mill

Grants: This study was supported by Vice Chancellor of Research, Shiraz University of Medical Sciences under grant nr. 14863.