ISSN(online): 2589-8698
ISSN(print): 2589-868X

International Journal of Medical and Biomedical Studies

Available Online at www.ijmbs.info

Volume 1, Issue 2; March-April: 2017; Page No. 13-16

FORMULATION AND EVALUATION OF ASPIRIN RELEASE FROM MATRIX PELLETS COMPRESSED INTO MUPS TABLET

Virender Singh

Department of Pharmaceutics JCP, Jaipur

1. INTRODUCTION:

MUPS (Multiple Unit Pellets System):

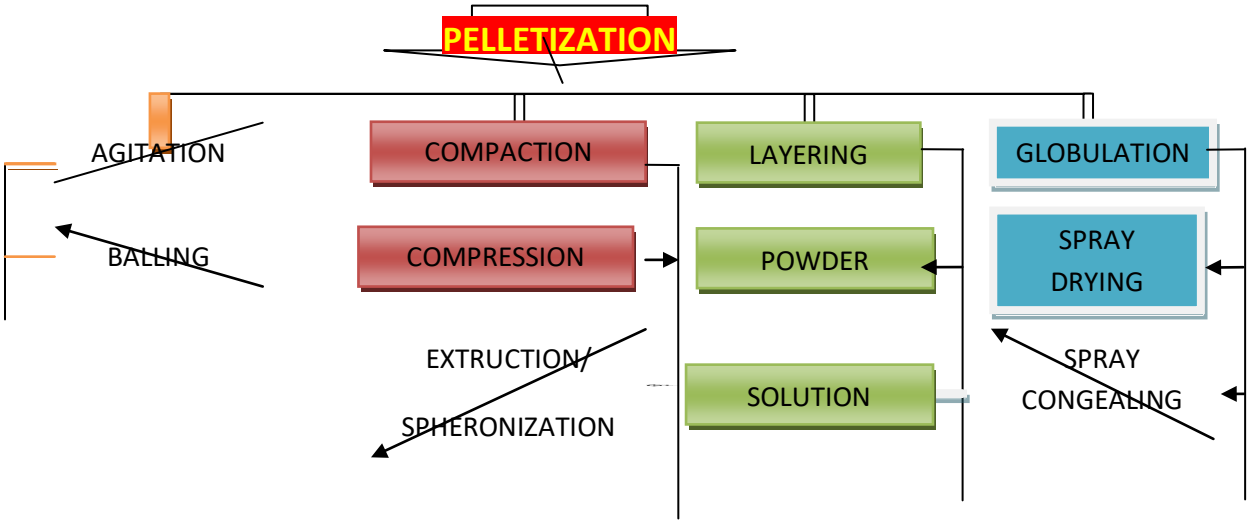
The oral route of drug administration is the most important and most user-friendly route of administration. In recent years, Multiple Unit Pellet Systems (MUPS) tablets are widely used in solid dosage form design. MUPS is considered to provide pharmacokinetic advantages compared to monolithic dosage forms. Typically, modified release pellets are contained in MUPS tablets. Modified release drug delivery systems have acquired very important role in pharmaceutical research and development.[1]

1.1 Advantages of Compaction of MUPS over Conventional Modified-Release Tablets and/or Pellet-Filled Capsules and Tablets

1. The compression of multiparticulates into tablets, unlike the hard gelatin capsule, is a tamper-proof dosage form and has greater physicochemical and microbiological stability of pellets as they are embedment in the inert matrix.
2. Tablets have less difficulty in esophageal transport than capsules.
3. Tablets containing coated subunits can be prepared at a lower cost than these subunits filled into hard gelatin capsules because of higher production rate of the tablet press.
4. The expensive control of capsule integrity after filling is also eliminated.
5. In addition, tablets containing multiparticulates without losing the controlled-release properties could be scored, which allow a more flexible dosage regimen.

1.2 Pelletization techniques:

The preparation of spherical agglomerates can be approached by several techniques which can be subdivided into the basic types of systems shown in figure 3.



(Fig: 1.1 Different pelletization techniques)

1.3 Types of MUPS formulations[2]

MUPS formulations are broadly classified into two types:

1. MUPS with matrix pellets.
2. MUPS with polymer coated pellets.

1.4Drug Profile[3]

A) Name of drug: Aspirin

(Fig: 1.2: - Structure of acetyl salicylic acid)

B) Description:

Weight : 180.1574

Chemical formula : $C_9H_8O_4$

IUPAC Name : 2-(acetyloxy) benzoic acid

Half life : The plasma half-life is approximately 15 minutes; that for salicylate lengthens as the dose increases: doses of 300 to 650 mg have a half-life of 3.1 to 3.2 hours; with doses of 1 gram, the half-life is increased to 5 hours and with 2 grams it is increased to about 9 hours.

Melting point : 135°C

Boiling point : 140°C

2. OBJECTIVES OF WORK

Formulation and evaluation of aspirin release from matrix pellets compressed into MUPS tablet.

Present study was carried out with following objectives:

- To develop a stable formulation of Aspirin MUPS Pellets with optimization of polymer, in different concentration, for matrix former on pellets.
- To develop a tablet formulation for Aspirin Pellets with optimization of different diluents and different disintegrating agents with different Concentrations.
- To perform the stability studies

3. METHODOLOGY

A) Determination of analytical wave length

B) Standard Calibration Curve of Aspirin in1.2 pH Buffer

C) **Method for preparation of MUPS tablet:**

1. Drug loading
2. Polymer coating
3. Compression

D) *In vitro* dissolution study

4. IMPLICATIONS

Matrix pellets of swellable polymers or waxes, retain their controlled release characteristics to a larger extent even on compression since the release of drug from such pellets depend upon swelling or erosion of matrix rather than by diffusion through the membrane. However, an important point that needs consideration in the design of MUPS of such matrix pellets is fusion of pellets with each other during compaction which may not be obvious during compression of coated pellets. Fusion of matrix pellets as a result of compaction can be avoided by application of film coating on such pellets or excessive blending with a hydrophobic agent separately prior to mixing them other extra granular materials before compression into tablets.

5. REFERNCES

1. Sanjay Kumar Panda, Kirti Ranjan Parida, Harekrishna Roy, Priti Talwar, Palaniyandi Ravanan, “A Current Technology for Modified Release Drug Delivery System: Multiple-Unit Pellet System (MUPS)” International Journal of Pharmaceutical Science and Health Care Issue 3, Vol 6. December 2013

2. VR Sirisha K, K Vijaya sri, K Suresh and G Kamalakar Reddy, "Multiple unit pellet systems: a review" Int J Pharm 2012; 2(2): 419-425.

3. http://www.drugbank.ca/drugs/DB00945