



A REVIEW - PELLETS AND PELLETIZATION TECHNIQUES

Krutika Mule¹ Nayana Tayade² Nandakishor B Deshmukh³ Aishwarya Ghuge⁴

1,2-Student Of Bachelor Of Pharmacy,

Shraddha Institute Of Pharmacy, Kondala Zamare ,Washim - 444505

3,4-Assistant Professor Department Of Pharmaceutics,

Shraddha Institute Of Pharmacy , Kondala Zamare ,Washim- 444505

1. ABSTRACT: -

In Present Time The Pelletization Technologies Are Gaining Much More Attentions As They Represents An Efficient Pathway For The Manufacturing Of Oral Drug Delivery System. Pelletization Is The Process In Which We Obtain Pellets Or Spherical Particles Having A Dimension Between 0.5-1.5mm. Area Covered By The Following Review Provides A Brief Outline In Pellets & Pelletization. In This Review, We Have Discussed On Pellets, Various Parameters Which Affects Pelletization, Equipment Used In the Pelletization Process, Different Techniques Of Pelletization And IRON ORE And Pelletizing Technology. It Is Expected That The Palettization Is An Effective And Efficient Approach Which Can Help In the Improvement Of Absorption, Bioavailability Stability, Etc. The Aim Of This Paper Is To Review Some General Aspects About Pellets And Pelletization And Some Common Techniques Being Utilized In The Pharmaceutical Industry.

Keywords: - Pelletization, Pellets, Extension , Spheronization, Cryopelletization , Controlled Drug Delivery, Oral Solid Dosage .

2. INTRODUCTION: -

Controlled Drug Delivery System Plays An Important Role Over The Conventional Dosage Forms.

Pellets: -Historically The Word Pellet Has Been Used By Various Industries To Describe A Variety Of Agglomerates Produced From Different And Diverse Raw Materials. Pellets Are Small Free Flowing Spherical Units Ranging In Size , Prepared By Agglomeration Of Fine Powders. There Size And Shape Allow Their Administration As Injections And Also For Oral Drug Delivery. Pellets Range In Size, Typically, Between 0.5-1.5, Though Other Sizes Could Be Prepared Or 500 – 1500um.

Due To Their Various Advantages Pellets Have Gained Considerable Attention In the Development Of Both Immediate Release And Modified Release Dosage Form .

3. FORMULATION REQUIREMENT: -

i. Taste Masking: -Micropellets Are Ideal For Products Where Perfect Abatement Of Taste Is Required. Pellets Provides The Masking Of Unpleasant Taste Without Lowering Of Bioavailability Especially For Oral Products.

ii. Immediate Release: -Administering Drugs In Pellets From Leads To An Increased Surface Area As Compared To Traditional Compressed Tablets And Capsules .This Would Considerably Reduce The Time Required For Disintegration And Have The Potential For Use In Rapidly Dispersible Tablets.

iii.Sustained Release :-Pellets Are Being Increasingly Used In The Manufacture Of Sustained Release Dosage Form Of Drugs .

Since The 20th Century, Technique Of Pelletization Was Known. Pharmaceuticals Industries Howed An Interest In Pelletization In The Early 1950s ,Due Increased Requirement For Sustained Release Preparations. Pellets Offer Therapeutic Advantages Such As Improved Absorption As Larger Surface Area Is Exposed For Absorption Reduced Occurrence Of Dose Dumping And Hence Lesser Gastric Irritation.

4.ADVANTAGES OF PELLETS: -

1. Improved Flow Properties.
2. Improved Appearance.
3. Easy Dispersion And Faster Absorption Of The Drug There By Decreasing Fluctuations In Plasma Peak.
4. Offers Flexibility For Designing And Developing A Dosage Form .
5. Enhance Safety And Efficacy Of The Drug .
6. Management Of Incompatible Drug Separation.
7. Taste Masking.
8. Dose Dumping Is Less Susceptible.
9. Various Drugs Shall Be Coated On Pellets To Activate Different Release Rates.

5.DISADVANTAGES

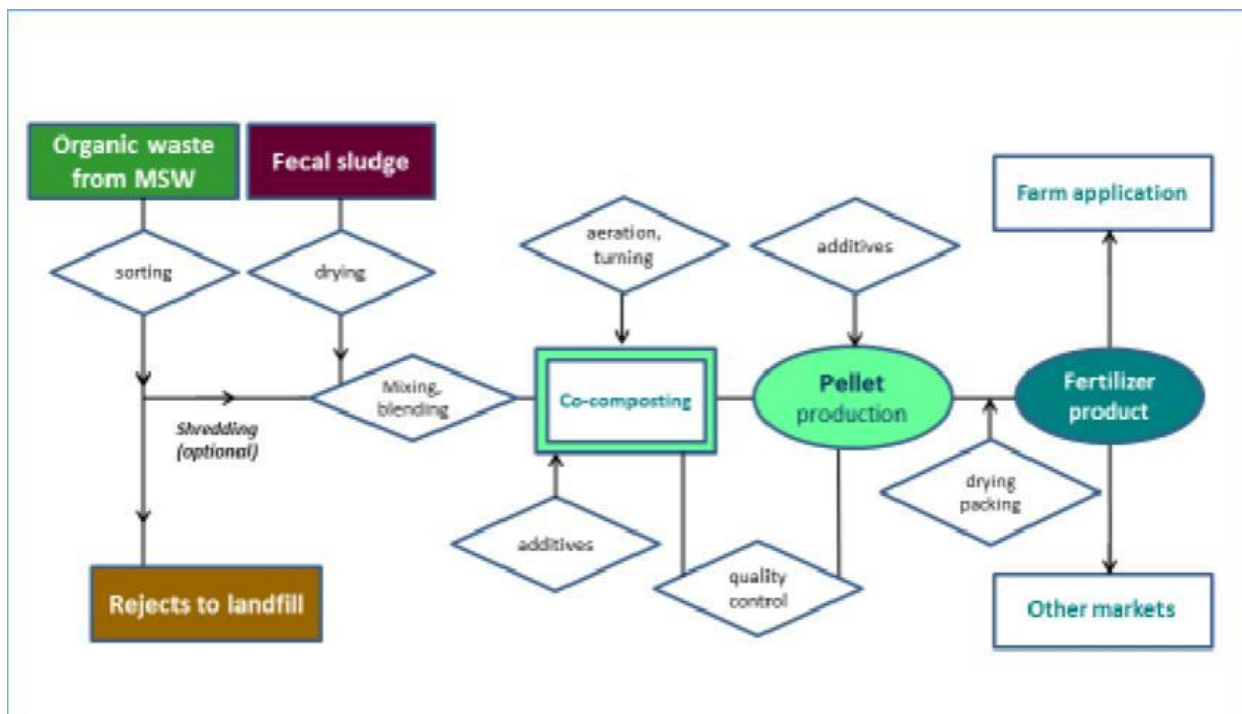
1. Compressing Pellets Into Tablets Is Problematic As The Film Coating Of Pellet Is Destroyed.
2. Filling Of Pellets In A Capsule Is Expensive.
3. Production Process Is Very Difficult To Control, Since Several Critical Process Parameters Such As The Amount Of Water Needed Time ,Pressure, Etc.
4. Required Highly Specialized Equipment And Qualified Personnel.

6.IDEAL PROPERTIES OF PELLETS :-

- 1) Spherical Shape & Smooth Surface Texture.
- 2) Particle Size In Range Of 500 – 15000um.
- 3) The Quantity Of The Active Ingredient Should Be Maximum So As To Maintain The Pellet Size.

7. PELLETTIZATION

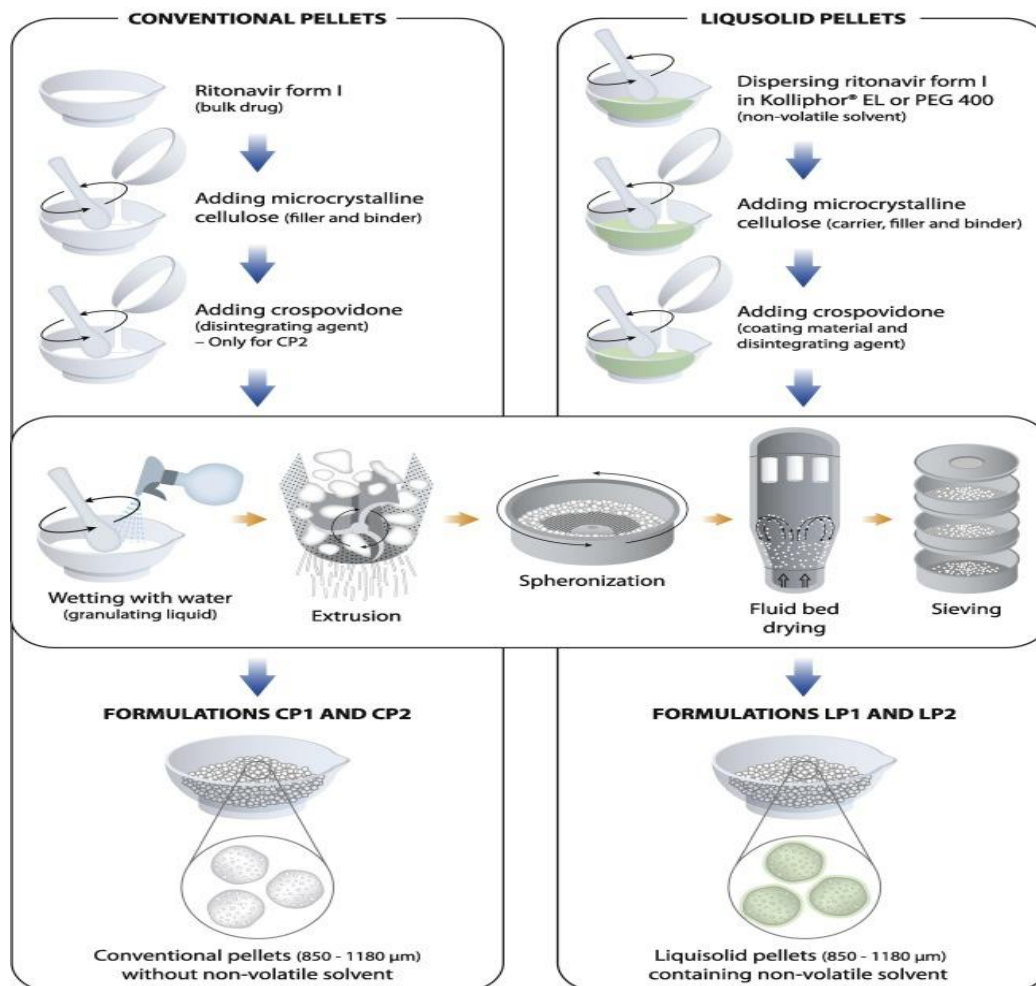
Sometimes Granulation And Pelletization Term Are Used Synonymously. If A Size Enlargement Process Produces Agglomerates In Sizes Range Of 0.1-0.2mm And About 20-50% Porosity, Such Process May Called Granulation. Where As Pelletization Is A Size Enlargement Process Of Manufacturing Agglomerates With A Relatively Narrow Size Range Of 0.5-2mm Called Pellets.Pelletization Is An Agglomeration Process Of That Converts Fine Powders Or Granules Of Bulk Drugs And Excipients Into Small, Free Flowing Semi-Spherical Units. Pellets Are Oral Dosage Forms Consisting Of Multiplicity Of Small , Discrete Units Each Exhibiting Their Desired Characteristics



8.RECENT ADVANCEMENT IN PELLETIZATION: -

a) **Liquisolid Pellets:** -De Espindola Et Al. Are Working On Liquisolid Pellets As A Technological

PREPARATION OF RITONAVIR CONVENTIONAL AND LIQUISOLID PELLETS

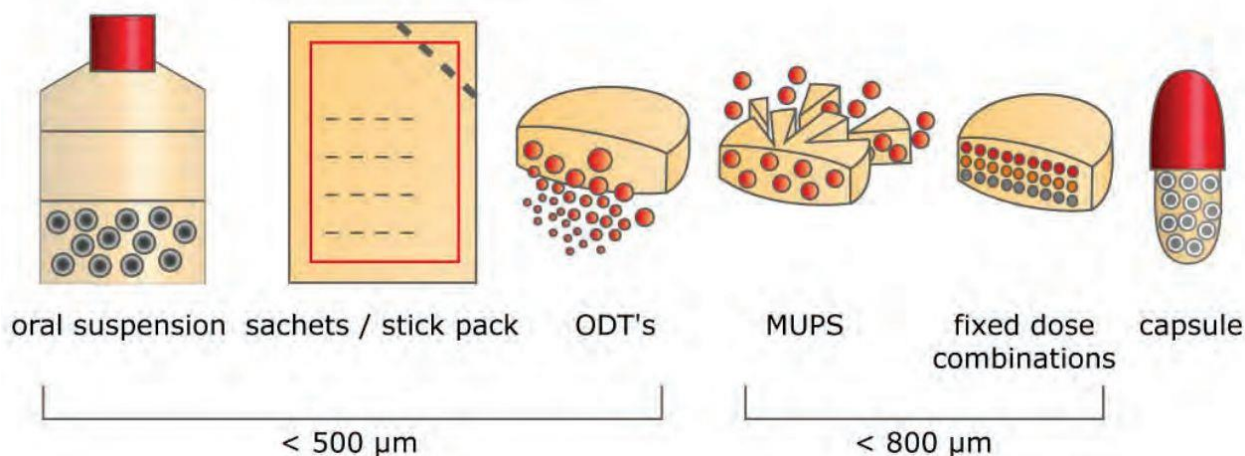


Advancement In Order To Improve The Solubility Of Poorly Soluble Drugs .They Prepared Liquisolid Pellets By Extension Spheronization With The Aim Of Improving Solubility And Hence Bioavailability Of An Antiretroviral Drug , Ritonavir .This Formulation Had The Additive Advantages Of A Multiparticulate Systems Along With Liquisolid Technology.

b) Micropellet Containing Pellet :- In This Pharmaceutical Dosage , Pellets Are Prepared Where In An Inner Zone Consists Of Micropellets (Average Of Diameter Of 50 To 500 Microns)Are Distributed In Matrix Of An Excipients. The Outer Zone May Comprise Of A Water Insoluble Polymeric Coating Either With Or Without An Active Ingredients. Hamman Et Al.Used Sedem EDS As A Formulation Tool To Formulate A Multiple Unit Pellet System Into A Tablet.

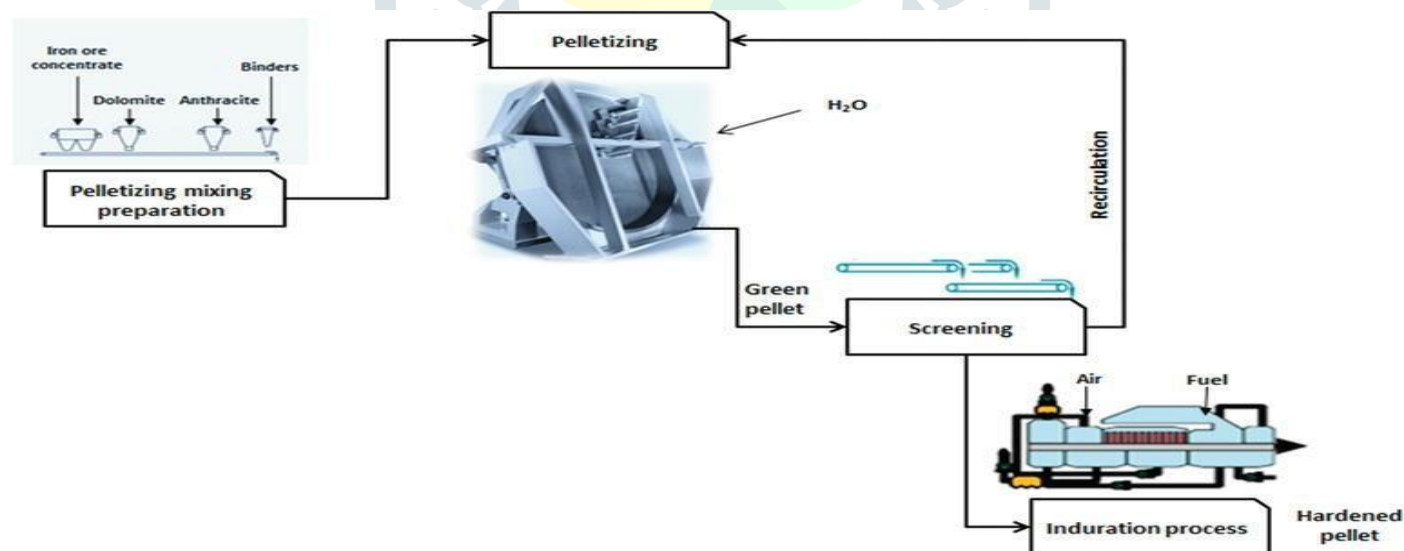
9. IRON ORE & PELLETIZING TECHNOLOGY

Pellet and Micropellet products



10. IMPROVE RESOURCE EFFICACY: -

IRON ORE Is The Main Source Of Iron And Steel And Our World Is Made Of It . The Computers We Use , The Chairs We Are Sitting On, Everything Contains Iron Ore. Iron Ore Is So Present In Our Everyday Lives That It Is Practically Impossible To Imagine A World Without This Mineral Resource. All Modern Methods Of Energy Generation And Transmitting Consists Of Iron And Steel . Iron Ore Fines Are Agglomerated Into Pellets And Then Indurated Using A Furnace To Create Iron Ore Pellets. These Are Typically Fed To A Blast Furnace Or DRI Plant As Part Of The Process To Make Steel. Designer Grate System In The World.



11. VARIOUS FACTORS INFLUENCING PELLETIZATION: -

i. Drying Technique And Temperature: - Ideal Pellets Can Be Obtained By Adequate Drying. Upon Optimum Drying, The Pellets Produced Will Be Of Proper Size, Excellent Flow, And Shape But This Drying Should Be Stable And Reproducible For All Batches. Properties Such As Variations In Weight, Inappropriate Filling Can Alter the Shape , Flow, And Size Of Pellets Leading To Alterations In The Fin Dosage Form, Which May Further Spoil The Delivery System Efficiency.

ii. The Screen Of The Extruder: - The Orifice Of the Extruder Will Influence The Pelletization Process, Increase In Dimension S Of Orifice Will Increase The Force Of Extrusion Because Of Presence Of Water At The Surface Of Extrudate This Increase In Force Of Extrusion Can Affect The Distribution And Shape Of Pellets.

iii. Spheronizer Speed Rate :- Speed Rate Of Spheronizer And Size Of Pellets. High Speed Of Spheronizer Yields High Crushing Strength And Smoother Surface.

iv. Starring Material:- Variables Of Starting Materials Such As Its Contents, Variety, Type Of Filler, and Size Of Particles, Have A Major Impact On The Pelletization Process.

v. Drug:- Pelletization Is A Versatile Technique Which May Be Used For the Preparation Of Pellet Of Various Materials With Different Pattern Of Release Mechanism (Like Immediate, Modified). To Achieve This, Various Process Variables As Well As Formulation Strategies Have To Be Utilized. Pellets Are Used For Taste Masking Of Non-Palatable Drugs Such As Quinine Sulphate. Raval Et Al.Prepared Enteric Coated Pellet Of Budesonide, Since The Formulation Currently Available Exhibit Low Efficacy As A Result Of Premature Drug Release.

vi. Composition Of Granulating Fluid:- Pellets Are Prepared By A Process Of Wet Granulation, There By Making The Composition And Concentration Of The Granulating Fluid An Important Parameter During Pelletization \ Spheronization Technique.

vii. Moisture Content: - Water Content Plays An Important Role In Determining The Quality Of Spheres, There By Making It A Significantly Important Process Variables. A Decrease In Moisture Content, Below The Lower Limit Would Lead To Production Of A Large Number Of Fines During The Techniques Of Spheronization.

viii. Rheology:- Rheological Conditions Of Wet Mass Will Determine The Flowability In Extruder And Also During The Spheronization Operation. So, Variation In The Theology Of Wet Mass May Result In Non-Uniform And Improper Extrusion.

12. EQUIPMENT USED IN MANUFACTURING OF PELLETS

A) Supply Bins:-The Supply Bins Located Ahead Of The Pellet Mill, Should Store A Sufficient Quantity Of Feed, To Provide A Continuous Operation Of The Pelleting Unit And Also A Continuous Operation Of The Mixer Which Provides Mash To The Pelleting Unit. The Supply Bins Should Have At least Two Bins , Each Of A Capacity Thrice The Capacity Of The Batch Mixer Used To Supply Feed To The Pelleting Unit.This Type Of Supply Bins Results In An Efficient Mixing As Well As Pelleting.



B) Pellet Mills:- The Thoroughly Mixed Ingredients (Now Called Mash Or Meal) Flow Into A Flow Rate Regulator Called A Feeder Arrangement Such As Single Flight, Double Flight, Full Pitch, Or One – Half Pitch To Perform Even Under Varying Conditions. It Is Equipped With Speed Controlling Devices Such As a Variable Speed Electric Drives. In The Modern Mill A Ring Type Die & Rollers Are Mounted In A Vertical Plane With The Die Turning About The Two Fixed Rollers



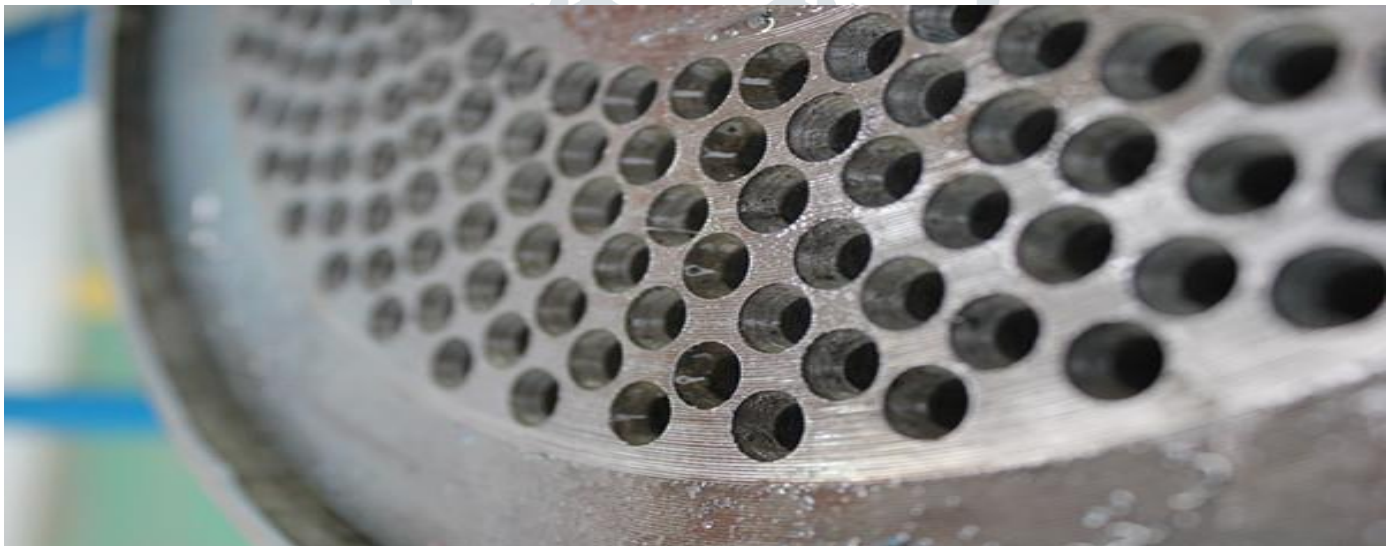
C)Pelleting Dies:- Die Thickness & Hole Size Varies With The Type Of Product To Be Pelleted. The Following Types Of Dies Are Generally Used In The Pelleting System:-

i). Standard Die :-In This Type,All The Holes Have The Same Effective Thickness.

ii). Standard Relieved Die:- In This Type Also The Holes have The Same Effective Thickness But The Discharge Side Of The Hole Is Enlarged To A Depth Of 1\4'' (Relieved). This Die Is Used For Adding Strength To The Die Without Increasing The Thickness Of The Hole Depth.

iii. Standard Variable Relief Die:- In This Type, All The Holes Are the Same Except The Two Or Three Outside. Rows Of The Die Which Are Relieved By 1\4''. Some Products While Being Pelleted Squeeze Out To The Side Of The Die, Thus Plugging The Two Or Three Outside Rows.

iv. Staggered Relief Die:-This Type Serves As The Standard Variable Relief Die Except That The Two Or Three Outside Rows Are Relieved By 1\2'' & The Next Two Or Three Rows Are Relieved By 1\4''.



D)Coolers:- The Pellets From The Pellet Mill Flow Under Gravity Into A Device For Cooling & Drying. When The Pellets Leave The Pellet Mill, They Are At Very High Temperatures (190°F)& Also Have High Moisture Content (17-18%). Proper Storage & Handling Of The Pellets Demand Their Moisture Content To Be Reduced

To 10 – 12 % & Their Temperature To Be Maintained At 15°F Above Atmospheric Temperature.

Crumble Rolls:- A Crumbling Process Should Be Used For Producing Pelleted Feed Particles Smaller Than 10\64''. In This Process, Small Pellets Are Broken Between Two Powdered Corrugated Rolls, Placed Below The Cooler; Thus An Additional Rate Controller Is Not Required A Crumbling Roll Has Heavy Steel Frame& Housing.



E)Shaker:- The Product From The Crumbling Device Is Passed To A Shaker That Extracts The Undersized Portions Of The Product From The Currently Sized Material.



13. DIFFERENT TYPES OF PELLETIZATION TECHNIQUES :-

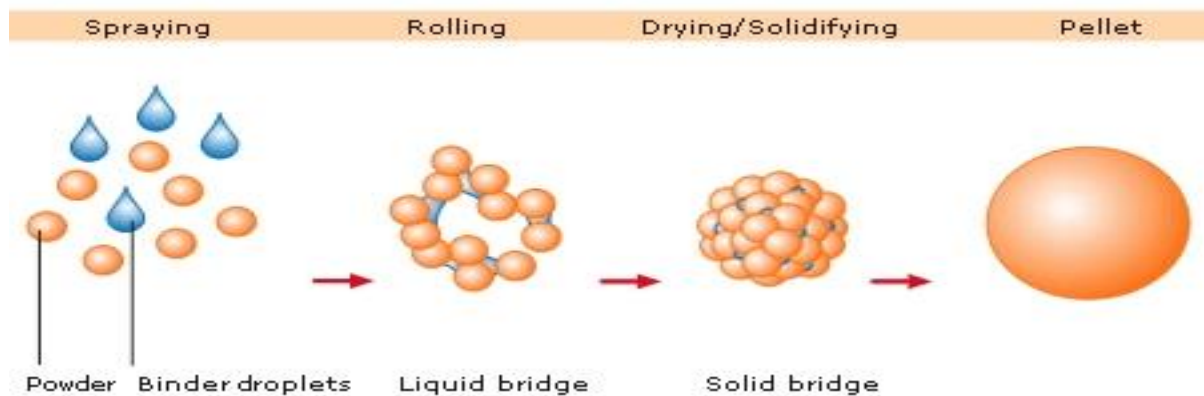
Pelletisation Is An Agglomeration Process In Which The Fine Powders Or Particles Of Bulk Drugs And Excipients Are Converted Into Small, Free-Flowing, And Roughly Spherical Units Called Pellets. Pelletization Is Often Referred To As A Size-Enlargement Process That Involves The Manufacture Of Agglomerates Or Pellets Having A Relatively Narrow Size Range (Mean Size From 0.5 -2.0mm). Pellets Have Free-Flowing Properties And A Low Porosity (About 10%).

The Different Types Of Pelletisation Techniques Are:

- a) Direct Pelletisation,
- b) Pelletisation By Drug Layering,
- c) Pelletisation By Powder Layering,
- d) Pelletisation By Suspension Or Solution Layering,
- e) Pelletisation By Extrusion And Spheronization,
- f) Spherical Agglomeration/Balling,
- g) Cryopelletisation,
- h) Hot-Melt Extrusion Technology (HME),
- i) Globalisation Or Droplet Formation,
- j) Compression,
- k) Freeze Pelletisation,
- l) Fluid Bed Coating, And
- m) Tangential Spray Coating (Rotor Pellet Coating).

a) DIRECT PELLETIZATION

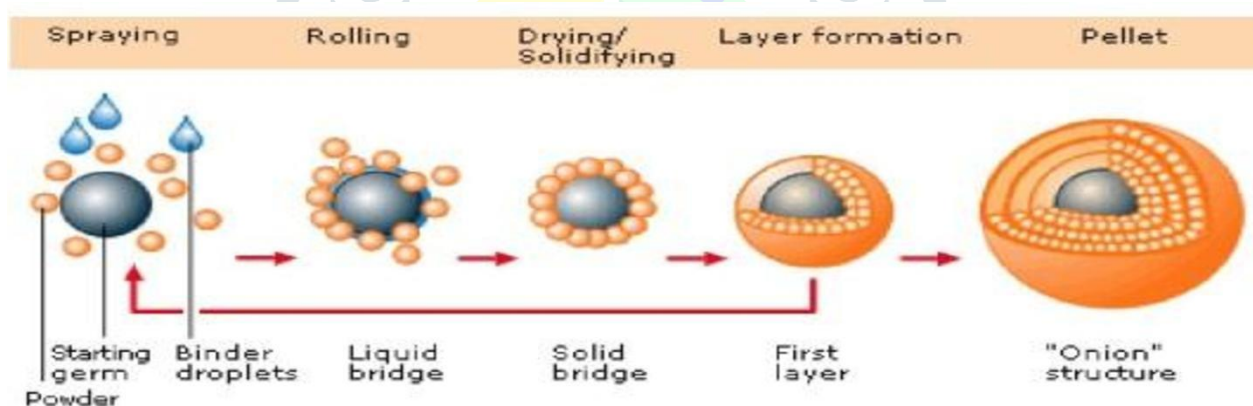
In Direct Pelletisation Technique, Pellets Are Manufactured Directly From Powder With A Binder Or Solvent. This Process Is Fast And Requires Less Auxiliary Materials. By This Technique, Compact And Round Pellets Of Diameter Between 0.2 -1.2mm Are Obtained. Such Pellets Are Ideal For Automatic Dosing And Uniform Coating. Pellets Have A Density Higher Than The Spray Granulates And Agglomerates. Process



Principles powder is mixed and moistened with a solvent or binder. The obtained powder bed is subjected to centrifugation. The resultant impact and acceleration forces lead to the formation of agglomerates, which become rounder into uniform and dense pellets. The rotation speed directly influences the density and size of pellets. The moist pellets are dried in the fluid bed. Direct pelletisation can also be carried out by spray granulation. With the addition of suitable excipients, pellets are either compressed into tablets or filled into capsules. The round shape of pellets makes them ideal for uniform coating, and they are also good for automatic dosing.

b) Pelletization By Drug Layering

In the process of drug layering, successive layers of drug entities from solution, suspension, or dry

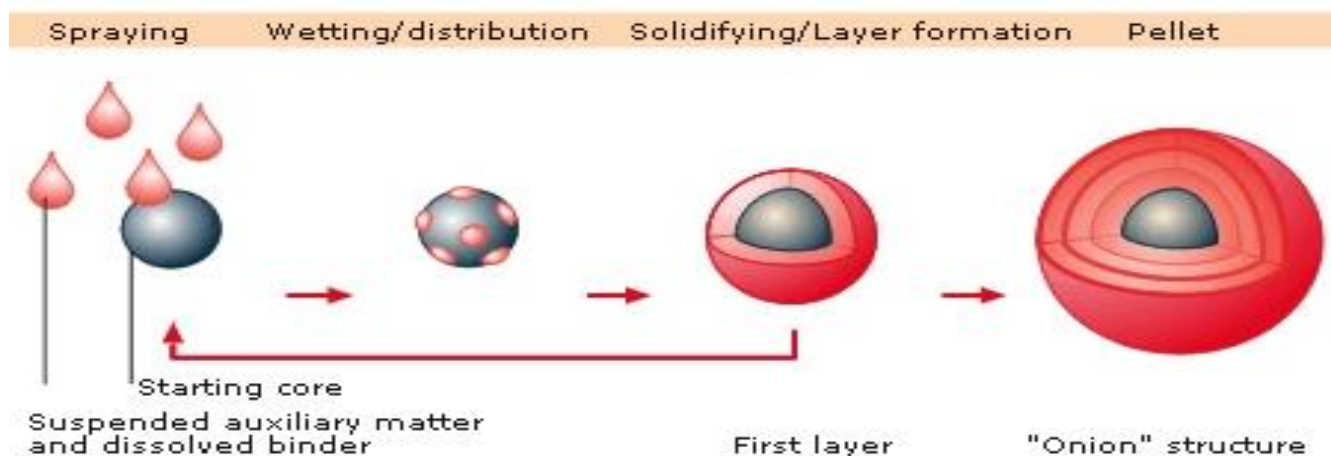


Powder are deposited on nuclei (crystals or granules of the same material or inert starter seeds). In solution or suspension layering, drug particles are dissolved or suspended in the binding liquid; while in powder layering, first a binder solution is sprayed on previously prepared inert seeds, and then the powder is added.

c) Pelletization By Powder Layering

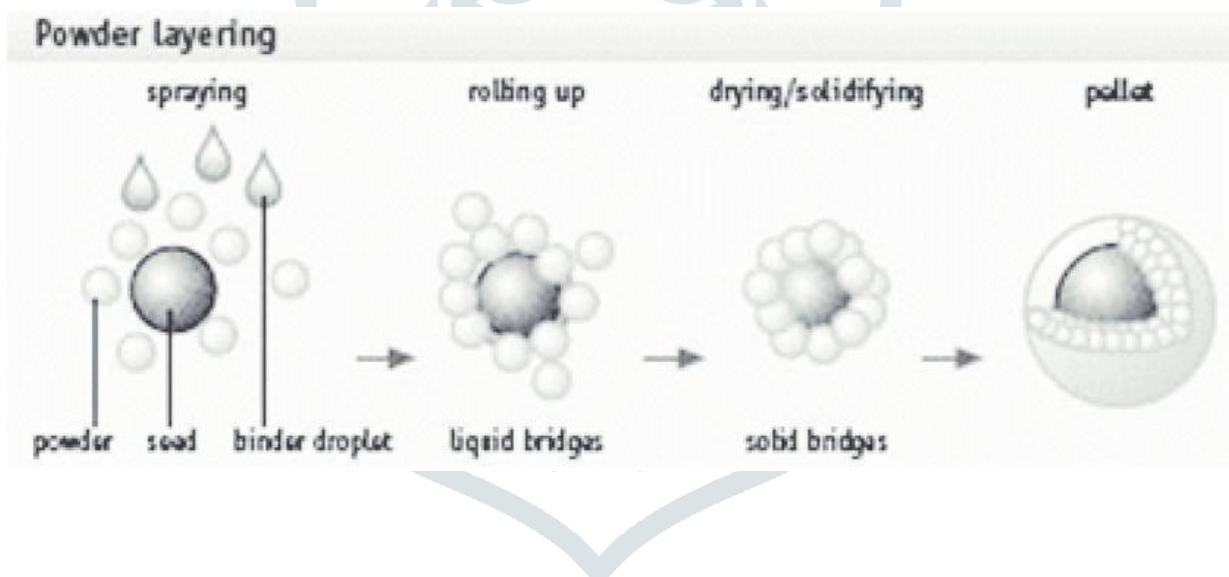
In the process of powder layering (Figure 6.2), dry powders of drugs and excipients are deposited with the help of binding liquids on pre-formed nuclei or cores. Since powder layering involves the simultaneous application of binding agents and dry powders, it requires specialised equipment like a spheroniser. The principal requirement of this process is that the product container should have solid

Walls With No Perforations So That Powder Is Not Lost From Beneath The Product Chute Before The Powder Is Picked -Off By The Wet Mass Of Pellets Being Layered.



d) Pelletization By Suspension Or Solution Layering

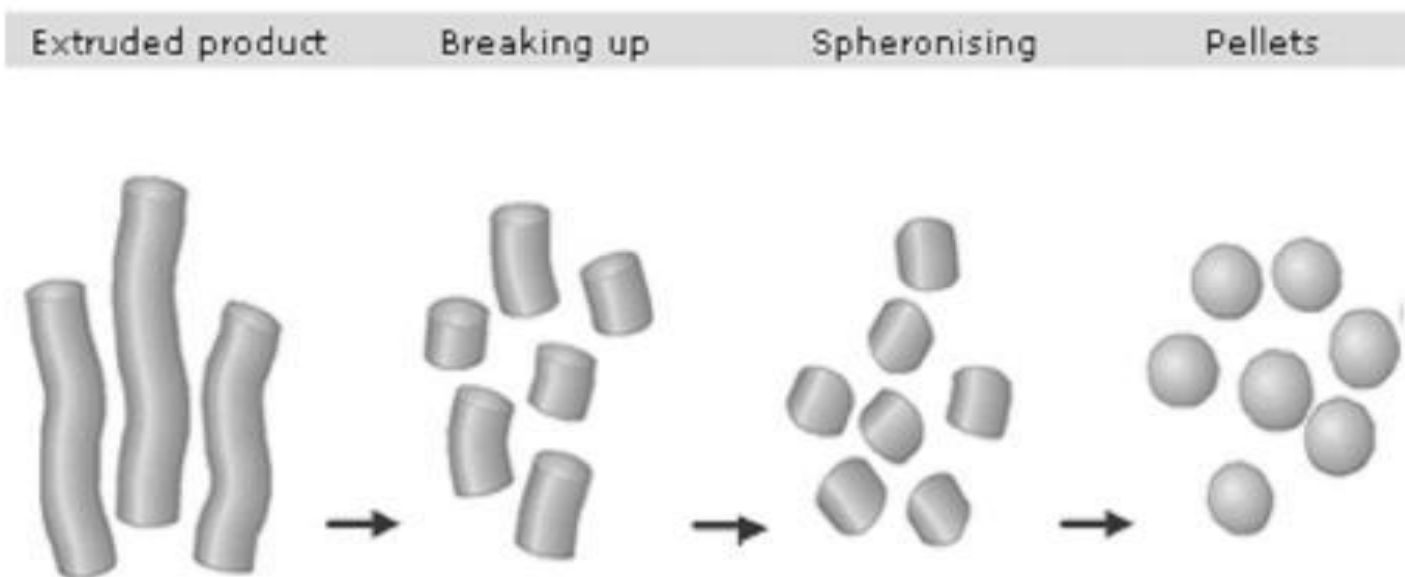
In The Process Of Solution Or Suspension Layering (Figure 6.3), Successive Layers Of Solution And/Or Suspensions Of Drug Substances And Binder Are Deposited Over The Starter Non-Peril Seeds (Inert Material Or Crystals Or Granules Of The Same Drug). Since The General Coating Process Is Involved In Solution Or Suspension Layering, Conventional Coating Pans, Fluidised Beds, Centrifugal Granulators, And Wurster Coaters Are Used For Manufacturing Pellets. The Efficiency Of This Process And The Quality Of Obtained Pellets Are Partially Related To The Type Of Equipment Used.



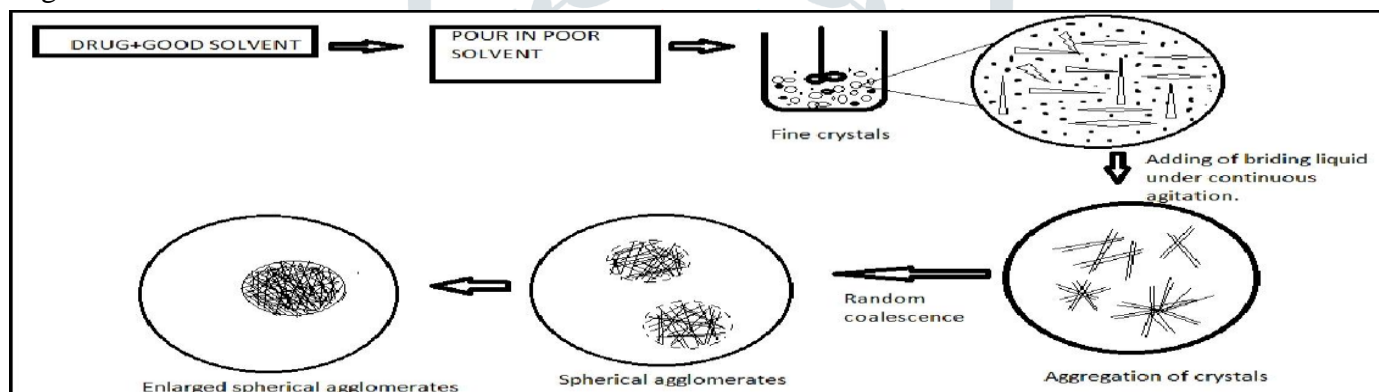
e) Pelletization By Extrusion And Spheronization

In The Process Of Extrusion And Spheronization (Figure 6.4), First Extrudes Are Made From The Powder Material Using The Extruder And Then Converted Into Beads (As Fine As 0.6mm) Using The Spheroniser. The Powder Material Could Be A Drug Powder, Ayurvedic Powder, Food Ingredient Powder, Detergent Powder, Nuclear Powder, Etc. The Capsule Filling Method Has To Be Gentle Enough On The Pellets To Retain The Integrity Of Coating; While In the Case Of Powder Filling, The Filling Of Pellets Into Capsules Can Be Dependent Or Independent. In The Dependent Method, A Modified Augur Type Machine Is Used, And The Pellets Are Poured In The Capsule Shells Under Gravity. The Formulation Aspect Of This Approach S To Ensure That The Required Dosage Of Active Substance Is Present In The Volume Of Pellets Taken To Fill The Capsule Body. In The Independent Method, A Volumetric Fill By A Modified Dosator Method Is Used. Since The Piston In The Dosator Is a Narrower Than That is Used For Powder Filling, The Air Flows Between The Piston And The Dosator Wall. The Dosator Is Lowered Into The Pellet Bed, But No Compression Is Applied. A Vacuum Source Is Applied From Above The Piston To Retain The Pellets As The Dosator Is Moved Above The Capsule Body. The Vacuum Is Removed Once The Dosator Is Over The Capsule Body, And The Pellets Are Ejected With The Help Of An Air Jet.

Spherical Agglomeration/Balling

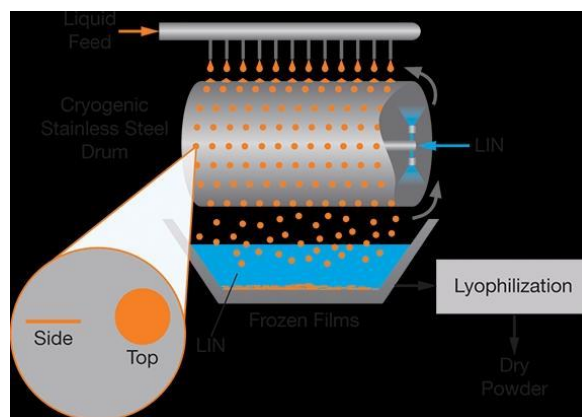


f) In Spherical Agglomeration Process, Powders Are Added With A Suitable Quantity Of Liquid Or Subjected To High Temperatures To Convert Into Spherical Particles By A Continuous Rolling Or Tumbling Action. Spherical Agglomeration Can Be Divided Into Liquid-Induced And Melt-Induced Agglomeration. Since Many Years Spherical Agglomeration Is Carried Out In Horizontal Drum Pelletiser, Inclined Dish Pelletiser, And Tumbling Blenders. However, In The Recent Technologies, Rotary Fluid Bed Granulators And High Shear Mixers Are Used.



g) Cryopelletization

In The Process Of Cryo Pelletisation, Liquid Nitrogen Is Used As A Fixing Medium To Convert The Droplets Of Liquid Formulations Into Solid Spherical Particles Or Pellets. The Technology Initially Developed For Lyophilisation Of Viscous Bacterial Suspension Can Be Used To Produce Drug-Loaded Pellets In Liquid Nitrogen At -160°C Temperature. The Procedure Allows Instantaneous And Uniform Freezing Of The Processed Material Due To The Rapid Heat Transfer Between The Droplets, And Thus The Large Surface Area Facilitates The Drying Process. The Amount Of Liquid Nitrogen Required For Manufacturing A Given Quantity Depends On The Solid Content And Temperature Of The Solution Or Suspension Being Processed. It Is Usually Between 3-5kg Per Kilogram Of Finished Pellets.



h) Hot-Melt Extrusion Technology (HME)

In The Process Of HME, The Raw Materials Are Pumped Through A Die (With A Rotating Screw Under Elevated Temperature) Into A Uniformly -Shaped Product. Rotating Screw Facilitates Mixing And Agitation De -Aggregates The Suspended Particles In The Molten Polymer, Thus Forming A More Uniform Dispersion.

i) Globalisation Or Droplet Formation

In The Process Of Globulation, Two Related Processes, I.E., Spray Drying, And Spray Congealing Are Involved. In Spray Drying, The Drugs In The Suspension Or Solution Without Excipients Are Sprayed Into A Hot Stream To Produce Dry And More Spherical Particles. This Process Is Used For Improving The Dissolution Rates, Hence The Bioavailability Of Poorly Soluble Drugs.

Compression

j) In The Process Of Compression (A Type Of Compression Technique For Preparing Pellets), Mixtures Or Blends Of Active Ingredients And Excipients Are Compacted Under Pressure To Obtain Pellets Of Definite Sizes And Shapes. The Formulation And Process Variables Controlling The Quality Of The Obtained Pellets Are Similar To Those Used In Tablet Manufacturing

k) Freeze Pelletization

In The Process Of Freeze Pelletisation, A Molten Solid Carrier/Matrix Is Introduced In The Form Of Droplets Into An Inert Column Of Liquid In Which The Molten Solid Is Immiscible. The Molten Solid Droplets Move Either Upward Or Downward In The Liquid Column (Depending On The Droplet's Density With Respect To The Liquid In The Column) And Solidify As Spherical Pellets. If The Density Of The Molten Solid Carrier/Matrix Is Less Than That Of The Liquid In The Column, The Droplets Are Introduced From The Top Of The Column And The Pellets Solidify In The Bottom. On The Other Hand, If The Density Of The Molten Solid Carrier/Matrix Is More Than That Of The Liquid In The Column, The Droplets Are Introduced From The Bottom And The Pellets Solidify At The Top.

l) Fluid Bed Coating

Fluid Bed Coating For Preparing Pellets Is Of The Following Three Types:

1) Top Spray Coating: With Top Spray Coating In The Fluid Bed (Batch And Continuous), Particles Are Fluidised In The Flow Of Heated Air Introduced Into The Product Container Through The Base Plate (Figure 6.5). The Fluid Bed Is Sprayed With The Coating Liquid Through A Nozzle From Above Against The Air Flow (Counter-Current). The Particles Dry As They Continue To Move Upwards In The Air Flow. The Coating Liquid Distributes Uniformly Owing To The Small Size Of The Droplets And Low Viscosity Of The Spray Medium. Coating In The Continuous Fluid Bed Is Suitable For Protective Or Colour Coatings Where The Product Throughput Rates Are High. In This Method, The Product Is Continuously Fed Into One Side Of The Machine, And By Means Of Air Flow Is Transported Forward Via The Sieve Bottom. The Dry Coated Particles Are Extracted Continuously.

2) Bottom Spray Coating (Wurster Coating): This Process Is Used When A Controlled Release Of Active Ingredients Is Required. In The Wurster Coating Process (Figure 6.5), The Surface Is Sealed Completely By Less Use Of The Coating Substance. The Spray Nozzle Is Fitted In The Base Plate Resulting In A Spray Pattern Concurrent With The Air Feed. By Using A Wurster Cylinder And A Base Plate With Different Perforations, The Particles To Be Coated Are Accelerated In The Wurster Tube And Concurrently Fed

Through The Spray Cone. As The Particles Move Upwards, They Dry And Fall Outside The Wurster Tube Back Towards The Base Plate. They Are Guided From The Outside Back To The Inside Of The Tube, Where They Are Again Accelerated By The Spray, Thus Producing A Highly Uniform Film Even On Different Sized Particles.

3)Bottom Spray Coating (Continuous Fluid Bed): This Process Is Suitable For Protective Or Colour Coatings Where The Products Throughput Rates Are High. The Product Is Continuously Fed Into One Side Of The Machine And By Means Of Air Flow Is Transported Forward Via The Sieve Bottom. Depending On The Application, The System Is Sub-Divided Into Pre -Heating Zones, Spray Zones, And Drying Zones Where Coating Liquid Is Sprayed From Below In The Form Of A Bottom Spray. The Dry And Coated

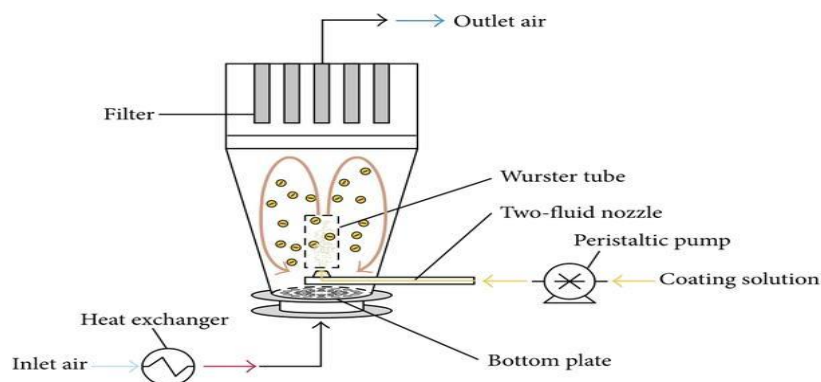


Figure 1: Schematic of the fluidized bed with a Wurster insert.

Particles Are Continuously Extracted.

m)Tangential Spray Coating (Rotor Pellet Coating)

In The Process Of Tangential Spray Coating (Figure 6.5), The Product Is Set Into A Spiral Motion By Means Of A Rotating Base Plate Which Has Air Fed Into The Powder Bed At Its Edge. The Spray Nozzle Is Arranged Tangentially To The Rotor Disc And Is Sprayed Simultaneously Into The Powder Bed. This Method Is Ideal For Coatings With High Solid Content, And For Applying Thick Film Layers.

14.SUMMARY & CONCLUSIONS: -

This Review Focused On The Brief Review On Pellets, Pelletization, and Equipment Used In Pelletization. For Instance,Extrusion Spheronization Is A Widely Used Method For Producing Spherical Pellets That Elicit High Drug Loading, But A Major Setback Is That It Consumes Granulating Liquid Such As An Aqueous System Which Requires Drying Which Is A Time-Consuming Process.

Though The Concept Of Multiparticulate Dosage Form Was Introduced In The 1950's In The Past Few Decades Pelletization Technology Has Gained An Increased Interest Within The Pharmaceutical Industry Because Of Its Simple Design, High Efficiency Of Producing Spherical Pellets & Fast Processing.

In This Review Attempt Has Been Done To Outline General Techniques Of Pelletization & To Assess Its Importance In The Development Of a Multiparticulate Drug Delivery System.

In This Review Attempt Has Been Done To Outline Various Factors Affecting The Pelletization Process.

In This Review We Briefly Discussed About The Pelletization Techniques For The Standardization Of The Pharmaceutical Industries.

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