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Research on Pharmaceutical Technology of Solid Preparation

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Abstract: As an important part of pharmaceutical preparations, solid preparation has an important role in the socio-economic and medical industry development. At present, the solid preparation takes more than 50% in the total amount of pharmaceutical preparations, which has a strong stability, less economic investment, and helps to reduce the cost of medical services system. However, according to the current development status of pharmaceutical technology of solid preparation in China, there are many problems that affect the progress of pharmaceutical technology industry. In this paper, the pharmaceutical technology of solid preparation is briefly analyzed.

Keywords: Solid Preparation; Pharmaceutical Technology; Research and Analysis

1. Introduction

At present, pharmaceutical technology in China has been widely concerned and applied, and has become an important course of medical profession. Pharmaceutical preparations affect the clinical effects of drugs, but it also need to combine the disease to carry out effective analysis. For example: capsules, tablets, ointment, etc., the same drug combined with clinical treatment requirements made of various formulations to improve the treatment effect. Solid preparation as an important part of the pharmaceutical dosage form, its technique requirements are strict, impact on drug quality is great, and it has certain difficulties to be used for large-scale processing.

2. Solid Preparation Analysis

Solid preparations are mostly powder, granules, tablets, and other different types, and the pharmaceutical dosage is of more than half of the total dosage. Solid preparation has a large feature that its chemical properties and physical properties are stable, which can avoid the possibility of reaction with the relevant substances so as to extend the drug shelf life. In addition, the economic input of solid preparations is less so that the sale price of drugs is lower and the medical burden is reduced. On the other hand, the solid preparation is small in size and can be carried on hand for easy treatment.

3. Pharmaceutical Procedures of Solid Preparation

3.1. Processing and Production Procedures

At present, the solid preparation processing and production steps include: crushed the drug and sieved, and crushed again the unqualified particles. The directly packaged particles are as powders. The granule processing is to dry the crushed material, and then granulate. Tablets are to fix molding the crushed particles; if they are put into the capsule, that is, capsule. In the solid preparation processing and production, the requirements are strict, the influential factors are many, and its ratio, mobility and others may help accurate dose drugs. Nowadays, the addition of retention aids is an effective way to optimize solid preparation.

3.2. Solid Preparation Calculation

Solid preparation pharmacy needs to take the effect of drug dissolution into consideration, which directly impact human body's absorption rate of drugs. At present, the solid preparation pharmaceutical process selected the Noyes-Whitney equation to yield the dissolution rate. Noyes-Whitney equation is a good computational model that integrates different models of drugs dissolution. Noyes-Whitney equation is a reliable method for optimizing the dissolution rate of solid preparation. As for the human body’s absorption of solid preparation, an effective method for increasing the rate of dissolution is to increase the dissolution surface of the drug or to increase the solubility of the drug. Crushing technology, technology of drug solid dispersion, and drug inclusion technology can effectively improve the solubility or dissolution surface area of the drug.

First, expand the elution interface of the solid preparation to reduce the particle diameter of the drug. Second, increase the drug dispersion parameters, and select the form of mixing to reduce the thickness of the solid preparation so as to enhancing the drug parameters. Third, speed up the dissolution of drugs, increase the heat, and optimize the crystal and other methods to quickly dissolve the drugs.

4. Analysis of Pharmaceutical Technology for Solid Preparation

Powder drug is selected for analysis. The processing and production principle of powder drug is to crush the drugs and accessories, forming a powder state. This type of agent dissolves quickly, and the effect is remarkable, which is suitable for children taking; if the powder drug is in full contact with the solution, it will be easy to volatilize.

Crushing can reduce the drug diameter and promote drug dissolution. Through the gastrointestinal epithelial cell membrane into the blood circulation and play its therapeutic role. Especially for some insoluble drugs, the drug dissolution process will become the rate of drug absorption process to ensure the effective role of drug to play. The crushing effect is the criterion for judging the material crushing and parameter of particle size before becoming drug and the particle size after pulverization with the drug. Under normal circumstances, crushed packets can be divided into shear force, compression, grinding, and other methods. Shear force crushing is applied in the fiber type drug crushing and grinding which can adjust the material flow effect. Combined with scattered environment it is divided into wet, low temperature, dry crushing, and other methods.

Screening can divide the pharmaceutical particles, selecting the powder drugs. Under normal circumstances, sieving can be divided into punching sieve and woven sieve. There is a clear request for the standard of drug particles in China, according to the size of the particles it can be divided into very fine powder, fine powder, powder, and coarse powder. Among which, the difference is in the screening of drug materials. Mix can ensure the drug even, and in the mixing process put into the coloring agent, flavoring agent, flavor and so on. At present, shear mixing and convection mixing belong to common mixing methods, which have a direct impact on the flow effect and density state. Generally the form of group matching is chosen to ensure the uniform of drug mixing.

Quality inspection is divided into humidity, color, and uniformity test, but also in accordance with the drug pharmacological mechanism. Drug packaging is the final step in drug production and processing, and it is closely connected with clinical effects of drugs. At present, the common detection method of drug dose is sampling method, usually over limit the amount of sample within 0.01% to ensure that the packaging process is correct. On the other hand, the drug packaging dose has clear requirements, that is, the limited requirements of single package powder weight difference is <0.10g weight difference limit is ± 15%; 0.10--0.30g weight difference is ± 10%; 0.10-- 4.50g weight difference is ± 7.5%; 4.50--6.0g weight difference is ± 5%;> 6.0g weight difference limit is ± 3%. The pretreatment process of other pharmaceutical types is and similar to the powder, its fundamental difference is the process after mixing, which should also be combined with the actual drug optimization.

5. Defects in the Pharmaceutical Technology of Solid Preparation and Solutions

At present, the solid preparation of pharmaceutical technology still has many problems, which need to be further optimized, such as drug quality, packaging, materials, and so on. Drug materials are closely linked to the drug quality; however, the solid preparation of pharmaceutical technology is not included in the material management, which has a large shortage in the drug quality checks. In the actual production and processing, some manufacturers reduce the application of materials for improving economic efficiency, resulting in lower quality of drugs. On the other hand, the lack of a complete management system in drug management and the waste of resources increase the cost of patients to buy drugs. The useless material disposal of solid preparation of pharmaceutical technology is not reasonable, polluting the ecological environment and thus affecting people's healthy living. The processing of drugs will produce more waste drugs. Under normal circumstances, discarded drugs should be handled with in the first time, and if they were randomly thrown away it will affect the natural environment and people's health. However, its management in China is lack of clear requirements, and is not conducive to the healthy development of society. With the commencement of the drug processing, its waste water and waste drugs are gradually increased. If it entered the river, it will cause harm to the water.

For the above issues, many perspectives and many links should also be considered. First, material check should be done well. China should initiatively learn from foreign advanced production and processing technology, combine with the status of China's pharmaceutical technology, whichever is the essence of its dregs, and improve the pharmaceutical technology. Second, build a complete drug quality management system. A complete management system is the basis to do a good job of material, and to achieve step by step. At the same time, well parameters management in the drug quality management. Produce the drugs in accordance with the standard and with strict checks. Finally, ensure the drug packaging effect, and avoid materials waste; the selection of packaging methods should be combined with the specific requirements of drugs and pharmacological mechanism. In addition, do waste disposal. In the processing and production of solid preparation of pharmaceutical technology, it is strictly prohibited waste into, and carries out harmless treatment.

All in all, there are many problems in the development of pharmaceutical technology in China, especially in solid preparation technology. With the progress of the country

and the increase of population, the use of solid drugs gradually increased. If the solid preparation is not perfect managed, but will impact the ecological environment and the healthy development of people. In the future development, China should also increase the cultivation of human resources, follow by scientific and technological development, and jointly enhance the technical capacity of solid preparation of pharmaceutical technology.

6 . Conclusions

Through comprehensive analysis, it can be seen that, first solid preparation has the feature of reliability and economic input. Second, the drug preparation is similar to its treatment process which has a close connection with the dosage form. Finally, people can quickly dissolve after taking it. On the other hand, the type of solid preparation diversified, including powder, granules, tablets, etc., which increased the use of drug production equipment and reduced economic investment. Solid preparation of pharmaceutical technology has the characteristic of complexity and comprehension; it combined with a number of disciplines. Pharmaceutical technology optimization cannot be achieved overnight, but also based on advanced medical theory to study. This paper carries out the analysis from the perspective of solid preparation analysis, pharmaceutical procedures of solid preparation, analysis of pharmaceutical technology for solid preparation, and defeats and its solution. It is hoped that the research on the pharmaceutical technology of solid preparation will help in the future.

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