PHARMACEUTICAL TABLET MANUFACTURING PROCESS VIA WET GRANULATION FOR IRON DEFICIENCY ANEMIA TREATMENT ERITIM

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Annotation. The most prevalent form of nutritional deficiency resulting in anemia is iron deficiency, primarily caused by insufficient consumption of dietary iron. World Health Organizations' information indicate that, 40% of all children aged 6–59 months, 37% of pregnant women and 30% of women 15–49 years of age are suffer from anaemia. Anemia is most commonly found in children under the age of 5, especially infants and those under 2 years old. These young children are particularly vulnerable to developing anemia [1].

According to research findings, the regions with the highest prevalence of anemia were Western sub-Saharan Africa with a rate of 47.4%, followed by South Asia and Central sub-Saharan Africa, both exhibiting a prevalence of 35.7%. These findings highlight the significant burden of anemia in these specific geographic areas[1-3].

Iron deficiency anemia in pregnant women lead to damage of childbirth. People with Iron deficiency anemia suffer from fatigue and weakness, Shortness of breath, rapid, irregular heartbeat, poor concentration and cognitive difficulties.

Key words: solution, iron deficiency anemia, tablet, technology.

Introduction.

Tablets are preferred by patients over other medicines due to their convenience, accurate dosage, shelf stability, easy administration, taste masking, dose modification capability, wide availability, and overall patient acceptability. Oral tablets are widely recognized as the predominant drug delivery systems utilized in contemporary patient treatments. Consequently, the pharmaceutical tablet manufacturing process (PTMP) occupies a crucial and pivotal role in the pharmaceutical industry. The preparation of wet granulation as the primary method for tablet manufacturing is widely acknowledged in pharmaceutical industry. This process involves a series of sequential steps, including mixing, wet granulation, drying of the granules, milling (if required), and tabletting.

Our research is focused on making tablets based on previous foundation by scientists of the Institute of Bioorganic Chemistry, have obtained a "Eritim" drug based on the polypeptides of the mammary gland, which is an erythropoiesis stimulator (an agent against anemia). Eritim stimulates erythropoiesis, increases the amount of hemoglobin in peripheral blood, number of erythrocytes and reticulocytes. Induces number of erythroblastic islets in the bone marrow and their degree of maturation, as a result, stimulates the erythroid tumor of bone marrow. The renal hormone erythropoietin plays an important role in stimulating functional activity of hematopoietic cells of the bone marrow in mechanism of biological action of thymus factor. The medicine of solution for oral administration by drops (10 ml solution contains 100 µg - 0.001% Eritim) in form of a solutionhas been used in medical practice since 2015.

Process Description. During research experiments Eritim and D-mannitol in a ratio of 1:1*105 prepared by drying in a lyophilic dryer, series 010321, expiration date 03.2023, have been used.

A sample of 100 grams of powder was initially mixed with 5 milliliters of distilled water and processed using wet granulation. The resulting mixture was left overnight in a dryer set at 37 degrees Celsius. The following day, materials was sieved through a 200-mm mesh. The result showed that granules are made successfully and ready to next steps.

Subsequently, tablets were produced using granules in press machine. This systematic procedure is a vital part of pharmaceutical manufacturing, ensuring the consistency and quality of final tablet products. Tablets are have been produced as expected without any difficulties while running machine.

In order to check tablets' quality sample are given to pre-clinical research and results were proved, tablet was the best formulation for Eritim, original medicine additionally, wet granulation increased tablets quality.

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