

Metformin release with pseudoboehmite

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Diabetes Mellitus is a chronic disease in which high levels of blood glucose are found. It arises when the pancreas does not produce enough insulin, a hormone that regulates blood sugar concentration. It also occurs when the body does not properly use the insulin it produces. There are two main forms of diabetes: type 1 diabetes, the treatment of which is insulin injections, and type 2 diabetes, where the body's cells do not respond to insulin properly. In Brazil the diseases that most affect the population are diabetes, hypertension and stroke. The number of Brazilians diagnosed with diabetes has grown 61.8% in the last 10 years. In 2006, 5.5% of the population had the disease and in 2016 8.9% [1]. It has also been observed in Brazil that diabetes increases with age and is almost three times higher among those with lower schooling. People between the ages of 18 and 24 have a rate of 0.9%, between 35 and 44 years old, the rate is 5.2%, and among people aged 55-64 years, the number reaches 19.6%. The largest registry, however, is in the population aged 65 years or older, which presents an index of 27.2%. In recent years, several papers reported the use of pseudoboehmite for use in controlled drug delivery systems. The drugs tested include atenolol [2], Glucantime® [3], acyclovir [4] and DOX, a typical chemotherapeutic anticancer drug [5]. In this research pseudoboehmite was produced by sol-gel process and metformin was incorporated in the gel of pseudoboehmite. After that the gel was vacuum filtered and dried to obtain a powder by freeze-drying. The dry powder was characterized by x-ray diffraction, thermal analysis (Thermogravimetric analysis and differential thermal analysis), nitrogen adsorption isotherm, specific surface area by B.E.T. method and scanning electron microscopy using secondary electron detector and EDS detector. The results shows that the drug was homogeneously incorporated in the pseudoboehmite.

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