

A33 PHARMACEUTICALLY IMPORTANT IRON-DEXTRAN COMPLEXES: A COMPARATIVE STUDY BY MÖSSBAUER AND POSITRON ANNIHILATION TECHNIQUES

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The microstructural peculiarities of iron-dextran complexes which were pharmaceutically important models of iron storage protein ferritin were studied by Mössbauer spectroscopy and positron annihilation techniques (angular correlation of annihilation radiation (ACAR) and positron life-time (PLT) measurements).

Several samples of iron-dextran complexes were studied in solution and in lyophilized form such as Imferon, Ferridextran and Dextrafer which were used as drugs for treatment of iron-deficiency anemias as well as some elaborated iron-dextran complexes with different molecular weight of dextran. Mössbauer spectra were measured at 87 and 295 K while ACAR and PLT spectra were measured at 295 K.

Mössbauer spectra characterized various types of iron core structure in studied iron-dextran complexes [1-3]. The results showed that iron cores were in various forms of FeOOH with different core size and electronic and magnetic states of iron. Moreover, it was found additional Fe(II) ions in samples of Ferridextran as well as possibly effect of aging for iron core in Imferon.

ACAR and PLT spectra parameters showed variations of the structure of dextran shell in the complexes. The values of the free volume radii and relative free volumes were determined. It was found that PLT parameters of Ferridextran characterized the presence of free iron ions that was in agreement with Mössbauer results.

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