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Photodynamic therapy 용 자성입자의 생체적합성 및 치료효과
The treatment effect and the biocompatibility of photosensitizer-adsorbed superparamagnetic nanoparticles for photodynamic therapy

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Superparamagnetic particles of Fe_3O_4 were nanometrically synthesized by coprecipitation method Decanoic acid and nonanoic aic as a 1st and 2ndsurfactants were used, and the only 1-step surfactant was required by the direct coating on particles in the case of 5-aminolevulinic acid And their toxicity of each fluid was estimated using Sprague-Dawley rats Also, A549 human lung cancer cell line was applied to confirm the PDT effect of each photosensitizer-coated magnetic fluids The PDT experiments were performed for the light doses with 0, 50, 200 and 400mJ/cm^3 Analyses of UV-spectrometerband pico-tag amino acidused to estimate the each coating efficiency of hematoporphyrin and 5-aminolevulinic acid quantitatively As a results, the coating efficiency of hematoporphyrin and 5-aminolevulinic acid was 2.0% and 12 5% respectively.

In the case of 5-aminolevulinic acid, as light dose increased, the cell destruction showed the proportional increase But in the case of hematoporphyrin, the remarkable cell destruction was not observed except the condition of 400mJ/cm3 And in vivo test, When 4% to total blood amount for all two materials were injected in a vein, all animals were dead And the improvement of coating efficiency of photosensitizer is required for the effective PDT.