

Detection of metastatic lung cancer of nude mice with Synchrotron Remission and Au-NPe6

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Introduction

Porphyrins are known to have affinities to neoplasms, and are used as photosensitizers for photodynamic therapies against some kind of cancers. Mono-L-aspartyl chlorin e6 (NPe6) is one of the photosensitizers. Photodynamic diagnosis is also reported with NPe6. However, photodynamic diagnosis is indicated for superficial cancers, because the diagnostic procedure using visible light. In this study, we try to detect metastatic lung cancer of nude mice with synchrotron remission (SR) and mono-L-aspartyl aurochlorin e6 (Au-NPe6).

Materials and Methods

Mono-L-aspartyl aurochlorin e6 (NPe6) was used as an enhancer. Bulb/C nude mice (4 weeks old male mice) were prepared as animal models. Two mice were prepared as control mice without tumor. Ten mice were injected 10^6 colon 26 cancer cells intravenously 1 week before Au-Npe6 injection. The cancer-injected-mice were prepared as 1. group 1 (20 mg/kg of Au-NPe6 was injected), 2. group 2 (40 mg/kg of Au-NPe6 was injected), 3. group 3 (80 mg/kg of NPe6 was injected). Before injection of Au-NPe6, SR irradiations were performed. A 25 keV of X-ray beam was prepared with a set of monochrometers. The beam was parallelized and enlarged with a couple of silicon crystals. SR irradiations were also performed 2 hours, 5

hours and 20 hours after injection of Au-NPe6. The absorption contrasts were detected with x-ray films (Fuji IX25). The contrasts of absorptions were measured with Picture PublisherTM program on Microsoft WindowsTM 98.

Results

Group 2 and group 3 mice were all died 30 minutes after injection of Au-NPe6. One group1 mouse was survived 20 hours after injection of Au-NPe6. A coin lesion, about 1 mm in diameter was detected on the film 2 hours, 5 hours and 20 hours after injection of Au-NPe6. The contrast was maximum 5 hours after the injection. The x-ray film 5 hours after the injection is shown as a figure 1.



Figure 1.

The relative absorbance is shown in figure 2.

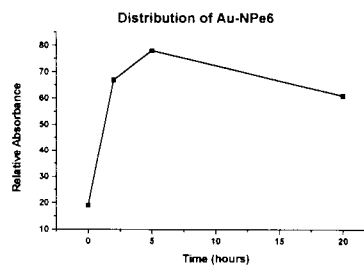


Figure 2.