

June 18, 2019

SBI Pharmaceuticals Co., Ltd.
The Cancer Chemotherapy Center of JFCR

The collaboration study with Cancer Chemotherapy Center of JFCR was published
in Scientific Reports, an online journal of Nature

SBI Pharmaceuticals Co., Ltd., (Head office: Minato-ku, Tokyo; Representative Director, President: Yoshitaka Kitao), a subsidiary of SBI Holdings, Inc., and Division of Molecular Pharmacology, Cancer Chemotherapy Center, Japan Foundation for Cancer Research (Laboratory: Tokyo; Division Head: Shingo Dan) announce that the outcome from the mutual collaboration study was just published in Scientific Reports, an online journal of Nature.

5-aminolevulinic acid (ALA) has been used as a cancer imaging agent for fluorescence guided surgery of malignant glioma and non-muscle invasive bladder cancer. This diagnostic technology, ALA photodynamic diagnosis (ALA-PDD), was established based on the fact that ALA, a sole source for heme biosynthesis, is incorporated by cancer cells and metabolized to protoporphyrin IX, a precursor of heme. PpIX is accumulated specifically in cancer cells and causes red fluorescence by irradiation of violet light, hence cancer cells are visualized.

The study using JFCR 39 cell panel composed of 39 cell lines of various cancer tissues revealed that all of the tested 39 cell lines produced, accumulated and excreted PpIX when ALA was administered. In the study to develop a new tool to enhance the sensitivity of ALA-PDD by increasing the amount of PpIX accumulated in cancer cells, we found a role for dynamin 2 in PpIX excretion by cells. Dynamin 2 is a cell membrane associated protein and plays a role in endocytosis and exocytosis. Inhibition of dynamin 2 resulted in marked increase of PpIX accumulation in cancer cells. These results will be utilized to improve the efficiency of ALA-PDD.

The study results shown above were published in [*Scientific Reports*](#), an online journal of Nature.

(*1) 5-aminolevulinic acid (5-ALA): An amino acid produced in mitochondria. It is an important substance that serves as a functional molecule related to energy production in the form of heme and cytochromes, and its productivity is known to decrease with age. 5-ALA is contained in food such as shochu lees, red wine and Asian ginseng. It is also known as a material forming chloroplasts in plants.

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