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Investigator-initiated clinical trial of an anti-cancer drug targeted on LAT1

Hayato Hikita[1], Hideaki Harada[2], Minoru Sigekawa[1], Yukio Kato[3], Shushi Nagamori[4], Yoshikatsu Kanai[5], Tetsuo Takehara[1]

[1]Dept. Gastroenterology and Hepatology, Grad. Sch. Med., Osaka Univ., [2]Dept. Medical Innovation, Osaka University Hospital, [3]Faculty of Pharmacy, Institute of Medical, Pharmaceutical and Health Sciences, Kanazawa Univ., [4]Dept. Collaborative Research for Bio-Molecular Dynamics, Nara Medical Univ., [5]Dep. Bio-system Pharmacology, Grad. Sch. Med., Osaka Univ.

LAT1 (L-type amino acid transporter 1: SLC7A5) is an amino acid transporter. While normal cells intake amino acids by LAT2, tumor cells intake amino acids by LAT1. In pancreatic cancer, LAT1 is overexpressed in tumor cells, and high expression of LAT1 is a predictive factor of poor prognosis. To date, LAT1 competitive-inhibitors, such as BCH and JPH203, were developed, and they are reported to be effective against various cancer cells in vitro and xenograft model. However, LAT1 non-competitive-inhibitors have not been developed.

Recently, we developed a LAT1 non-competitive-inhibitor and confirmed its anti-cancer effect against several cancer cells in vitro and xenograft model. Its oral administration also improved overall survival of genetically engineered mice with pancreatic ductal adenocarcinoma. After examining several nonclinical tests for the safety, we decided to move to the next step to acquire clinical proof of concept. To this end, we planned an investigator-initiated first in human clinical trial. After approved by institutional review board and clinical trial notification to PMDA, the trail has started and is ongoing. In the present session, we introduced our experienced process and various challenges to the investigator-initiated clinical trial.