



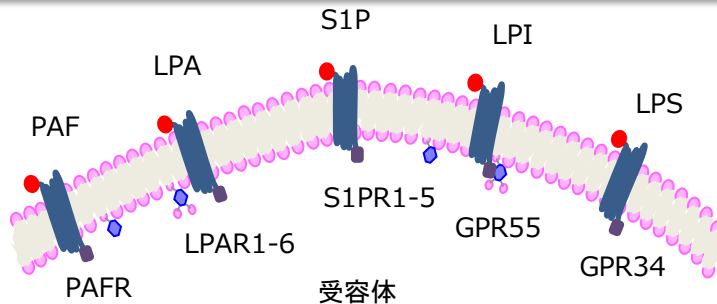
FACULTY OF
BIOSCIENCE &
BIOINDUSTRY
TOKUSHIMA UNIVERSITY

〈脂質からの創薬・創食研究〉

[キーワード: 生理活性脂質, 脂質代謝, 植物酵素]

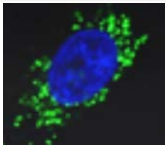
〈教授〉 〈田中 保〉

1. 生理活性リン脂質からの疾患予防研究



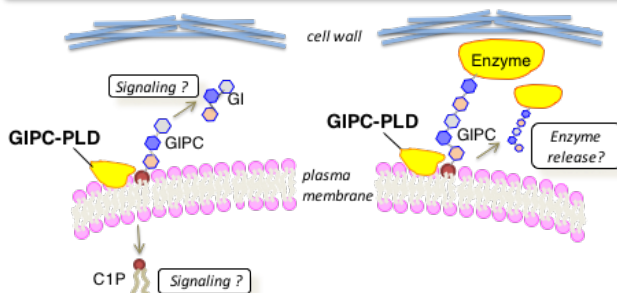
- 消化管粘膜を保護する生理活性脂質の研究
- ペルオキシソーム病や線維症と生理活性脂質の研究

2. 脂質代謝を促進するヘルシー脂質を創る



- ペルオキシソームを強化し、脂質代謝を促進する食物の研究

3. 植物酵素から機能性分子を創る



我々が植物に見出した新規スフィンゴ脂質分解酵素の生理的意義や応用研究

内容:

脂質は貯蔵エネルギーや細胞膜成分として我々の体に無くてはならない成分ですが、役割はそれだけではありません。細胞機能の調節シグナルの役目を果たしている脂質が存在します。それらは生理活性脂質と呼ばれ、プロスタグランジンのように近傍の細胞に働きかけるもの、細胞内シグナル物質として機能するものがあります。このような生理活性脂質の研究から病気の原因が解明され、新しい薬や機能性食品が開発される例も多くあります。私達の研究グループの研究目的は生理活性脂質と疾患との関連、脂質の代謝と細胞機能への影響を明らかにすることで、新しい薬や機能性食品を創ることです。

分野: 農芸化学、薬学

専門: 食品科学, 生物化学

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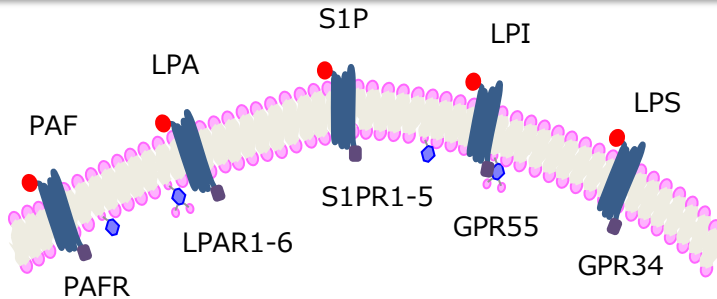




Development of medicines and functional foods based on bioactive lipids

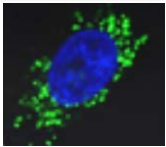
Professor, Tamotsu Tanaka

1. Study on bioactive phospholipid for disease prevention



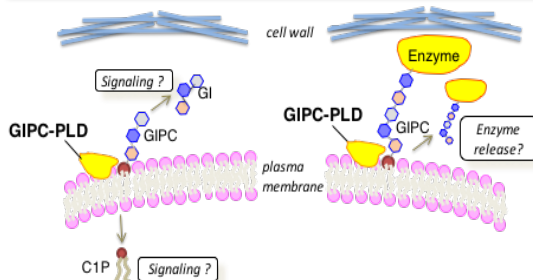
- Study on bioactive phospholipids for integrity of GI tract.
- Involvement of bioactive phospholipids on peroxisome disease and fibrosis

2. Development of healthy foods for enhancement of peroxisomal oxidative metabolism of fatty acids



- Peroxisomes are important organelle conducting oxidative metabolism of fatty acid. We are searching for functional lipids which induce biogenesis of peroxisomes.

3. Development of methods for lipid synthesis using GIPC-PLD.



Glycosylinositol phosphoceramide (GIPC) is a plant sphingolipid. We have identified GIPC-specific phospholipase D activity in plants. This enzyme will be useful for synthesis of ceramide and ceramide analogues.

Lipids are important components required for energy reservoir or constituents of cellular membrane. A small portion of membrane phospholipids is hydrolyzed and released into extracellular space for activating GPCRs (see left fig.). Alternatively, the enzymatically modified membrane lipids activate intracellular functional proteins, such as kinases. These membrane derived molecules are called bioactive lipids or signaling lipids. Recent investigations revealed that these signaling lipids are involved in human disease, such as inflammation and fibrosis. Enzymes producing or breaking such signaling lipids as well as its their GPCRs are targets for new medicines and functional foods for treatment of diseases.

We have identified foods containing abundant bioactive lipids. Now, we are studying its application to functional foods for integrity of GI tract. Involvement of lipid mediators in peroxisomal disease or fibrosis is also our important research theme. Our previous work has clarified the presence of a novel enzyme that hydrolyzes D position of glycosylinositol phosphoceramide (GIPC), a plant sphingolipid. This enzyme is interesting in view of its application and physiological importance in plants.

Keywords : bioactive phospholipid, lipid metabolism

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