



Title	Alpha-synuclein elicits glucose uptake and utilization in adipocytes through the Gab1/PI3K/Akt transduction pathway
Author(s)	Rodriguez, Araujo Gerardo
Citation	大阪大学, 2013, 博士論文
Version Type	
URL	<a href="https://hdl.handle.net/11094/59822">https://hdl.handle.net/11094/59822</a>
rights	
Note	著者からインターネット公開の許諾が得られていないため、論文の要旨のみを公開しています。全文のご利用をご希望の場合は、<a href=" <a href="https://www.library.osaka-u.ac.jp/thesis/#closed">https://www.library.osaka-u.ac.jp/thesis/#closed</a> ">大阪大学の博士論文について</a>をご参照ください。

*The University of Osaka Institutional Knowledge Archive : OUKA*

<https://ir.library.osaka-u.ac.jp/>

The University of Osaka

【55】

氏 名 ロドリゲス アラウホ ヘラルド  
RODRIGUEZ ARAUJO GERARDO  
博士の専攻分野の名称 博士 (医学)  
学位記番号 第 25881 号  
学位授与年月日 平成 25 年 3 月 25 日  
学位授与の要件 学位規則第 4 条第 1 項該当  
医学系研究科病態制御医学専攻  
学位論文名 Alpha-synuclein elicits glucose uptake and utilization in adipocytes through the Gab1/PI3K/Akt transduction pathway  
(アルファシヌクレインは Gab1/PI3K/Akt を介して、脂肪細胞での糖取り込み及び利用を促進する)  
論文審査委員 (主査)  
教 授 金田 安史  
(副査)  
教 授 下村 伊一郎 教 授 宮崎 純一

論文内容の要旨

〔目的(Purpose)〕

To describe the function of alpha synuclein (SNCA) in the glucose metabolism

〔方法ならびに成績(Methods/Results)〕

In vitro, treatment of recombinant SNCA activates PI3K/Akt pathway through Gab1 activation, independently of insulin receptor activation, leading to glucose uptake in 3T3-L1 cells. Also in vivo, injection of SNCA activates Gab1-Akt-glucose uptake pathway in adipose tissue and muscle thereby promoting glucose utilization in mice. In addition, SNCA knock-out mice displayed evident alterations in glucose utilization. Interestingly, SNCA exerts its effects mainly through LPAR2 in human and mouse preadipocytes.

〔総 括(Conclusion)〕

SNCA has important implications in the glucose metabolism in the adipose and skeletal tissues of the studied organisms.

論文審査の結果の要旨

Insulin is the main glucoregulator that promotes the uptake of glucose by tissues and the subsequent utilization of glucose as an energy source. In this paper, we describe a novel glucoregulator, the alpha-synuclein (SNCA) protein, that has previously been linked to Parkinson's disease. Treatment with recombinant SNCA promotes glucose uptake in vitro in preadipocytes and in vivo in the adipose tissues and skeletal muscles of mice through the LPAR2/Gab1/PI3K/Akt pathway; these effects occur independently of the insulin receptor. This function of SNCA represents a new mechanistic insight that creates novel avenues of research with respect to the process of glucose regulation.

以上の結果は、学術的に非常に有意義な成果であり、学位の授与に値すると考えられる。