

(様式1)

公益社団法人日本栄養・食糧学会 候補者研究業績

<学 会 賞>

1. 候補者

研究題目:(和)	脂質代謝に関連する病態の発症抑制に関する栄養生化学的研究		
(英)	Nutritional biochemical research on suppression of pathogenesis related to lipid metabolism		
氏 名:(和)	佐藤匡央		
(英)	Sato, Masao		
所属機関:(和)	九州大学大学院農学研究院・教授		
(英)	Faculty of Agriculture, Graduate School, Kyushu University, Professor		
学 位:	博士(農学)	最終学歴:	1994年3月九州大学大学院農学研究科食糧化学工学専攻 博士後期課程修了
専門分野	①栄養生理学、②栄養生化学、③分子栄養学、④公衆栄養学、⑤臨床・病態栄養学、⑥食生態学、⑦調理科学、⑧食品化学・食品分析学、⑨食品機能学、⑩食品工学、⑪食品加工・流通・貯蔵学、⑫食品衛生・安全学、⑬生理学、⑭生化学、⑮分子生物学、⑯臨床医学(内科系)、⑰臨床医学(外科系) ⑱その他		
履 歴	1995年 米国ルイジアナ州立大学シュリーブポート校医学部生理学科 博士研究員 1996年 科学技術振興事業団 科学特別研究員 派遣先:国立健康・栄養研究所 臨床栄養部 1997年 九州大学農学部食糧化学工学科栄養化学講座 助手 2000年 九州大学大学院農学研究院生物機能科学部門 助手に配置換 2005年 同部門 助教授 2007年 同部門 准教授に配置換 2016年 同研究院生命機能科学部門 教授 現在に至る		
会員番号:		入会年度:	1990年

2. 研究業績要旨(1,000 字以内)

現代栄養学における脂質研究は、病態発症と量(エネルギー摂取)および質(必須性、微量成分の存在)の関係の議論から始まる。この前提を踏まえて、応募者がこれまで行ってきた研究の大きな括りは(1)脂質による遺伝子発現の調節および脂質代謝に関わる遺伝子変異の発見と病態との関係、(2)脂肪酸の必須性およびその生体挙動と病態との関係、(3)食事および生体に存在する微量脂質成分と病態、および(4)脂質代謝に関連して発症する病態の改善作用を有する機能性成分の探索である。

(1)脂質による遺伝子発現の調節および脂質代謝に関わる遺伝子変異の発見と病態との関係

遺伝子発現の調節においては、小腸からの食事トリアシルグリセロール運搬に関わるアポリタンパク質 A-IV の遺伝子発現量が、食事 TAG 量の刺激により増加するのは、リンパ管への分泌刺激と胃の膨満感が関係することを突き止めた。遺伝子変異については、食事性高コレステロール血症ラットの原因遺伝子が *SMEK2* であることを発見した。この遺伝子は、糖を脂肪酸に変換する遺伝子を制御しており、肝臓における脂肪酸合成の低下が、血液中で異化されづらいリポタンパク質の合成をもたらし、結果として、血清コレステロール濃度が上昇することを見出した。

(2)脂肪酸の必須性およびその生体挙動と病態との関係

生活習慣病を中心とした横断研究において、ヒト血清中のリン脂質の脂肪酸組成を測定し、病態との関係を明らかにした。とくに n-3 系脂肪酸があらゆる病態と関係していることを明らかにした。

(3)食事および生体に存在する微量脂質成分と病態

食事中に存在する微量成分として申請者は、酸化コレステロール生理的意義について研究を行っている。体内に存在する酸化コレステロールは食事からの摂取および酵素で合成される。なかでも脂肪組織・細胞の脂質蓄積を抑制をもつ酸化コレステロールを発見している。

(4)脂質代謝に関連して発症する病態の改善作用を有する機能性成分

プロバイオティクス菌による肥満改善効果(商品化され、本学会の技術賞を受賞している)、卵白タンパク質および卵黄による脂肪肝抑制効果を発見している。

以上、応募者は、分子生物学、実験動物学、疫学的手法を駆使しながら、脂質代謝と病態発症及び予防研究を一貫して行ってきた。

3. 報文等リスト

(1) この研究に直接関連するもの(10 編以内)

- 1) Jiang Z, Kimura Y, Shirouchi B, Tanaka Y, Tsai W, Yuan Y, Sato M, Dietary egg white protein hydrolysate improves orotic acid-induced fatty liver in rats by promoting hepatic phospholipid synthesis and microsomal triglyceride transfer protein expression. *J. Nutr. Biochem.*, 98, 108820, 2021
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(2) その他の論文(編数制限なし)。

- 1) Yuan X, Nagamine R, Tanaka Y, Tsai W, Jiang Z, Takeyama A, Imaizumi K. Sato M, The effects of dietary linoleic acid on reducing serum cholesterol and atherosclerosis development are nullified by a high-cholesterol diet in male and female apoE-deficient mice. *Br. J. Nutr.*, 1-8. doi:10.1017/S0007114522001325 2022
- 2) Takeyama A, Teramoto A, Wang T, Hayashi T, Tanaka Y, Sato M, Shirouchi B, Dietary lysophospholipids reduce lymphatic cholesterol transport compared with dietary phospholipids in thoracic lymph-duct cannulated rats. *Lipids*, 56(6), 579-590, 2021
- 3) Tsai W, Nakamura Y, Akasaka T, Katakura Y, Tanaka Y, Shirouchi B, Jiang Z, Yuan X, Sato M, Soyasaponin ameliorates obesity and reduces hepatic triacylglycerol accumulation by suppressing lipogenesis in high-fat diet-fed

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- (3) 過去 5 年間の本学会での活動状況
- 本部関係活動
- 2012 年～現在 参与
 - 2015 年～現在 本部評議員
 - 2020 年～現在 理事
 - 2022 年～現在 学会活動強化委員会委員
- 支部関係活動
- 2020 年～現在 九州・沖縄支部長
- Journal of Nutritional Science and Vitaminology 関係活動
- 2017～2021 年 副編集委員会委員長
 - 2022～現在 編集委員会委員長 現在に至る
- 大会・支部会関係活動
- 2017 年 第 71 回日本栄養・食糧学会大会 実行委員
 - 2021 年 第 75 回日本栄養・食糧学会大会 シンポジウム世話人
第 75 回日本栄養・食糧学会九州・沖縄支部大会 会頭
 - 2022 年 第 76 回日本栄養・食糧学会大会 座長
 - 2024 年 第 78 回日本栄養・食糧学会大会 実行委員長
- (4) 特記事項
- 受賞
- 日本栄養・食糧学会
2018 年 栄養・食糧学会 技術賞

	「 <i>Lactobacillus gasseri</i> SBT2055 株の消化管を介した保健機能研究とその応用」
その他の学会等	
2018年	食品免疫産業賞 「 <i>Lactobacillus gasseri</i> SBT2055 の腸管を介した健康機能研究とその応用」
2019年	飯島藤十郎食品技術賞 「 <i>Lactobacillus gasseri</i> SBT2055 株の腸管を介した保健機能研究とその産業利用」
2022年	Best Paper Award of 2022, presented by American Oil Chemists' Society, <i>Lipids</i> 56(6):579-590(タイトル等はその他の論文 3 に記載)