（様式1）

公益社団法人日本栄養・食糧学会　研究業績

＜学　会　賞＞

1. 候補者

研究題目:(和)	酸化ストレスを制御する食品機能成分に関する統合研究		
(英)	Integrated Studies on Oxidative stress-Regulating Food Bioactives.		
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所属機関:(和)	徳島大学大学院ヘルスバイオサイエンス研究部		
(英)	Institute of Health Biosciences, University of Tokushima Graduate School		
学　　位:	農学博士	最終学歴:	昭和 50 年月京都大学大学院農学研究科修士課程修了
専門分野	⑨食品機能学		
履　　歴	昭和 50 年 4 月　京都大学食糧科学研究所食品分析部門・助手 平成元年 4 月　農林水産省食品総合研究所食品理化学部・室長 平成 9 年 10 月　徳島大学医学部栄養学科・助教授 平成 11 年 1 月　徳島大学医学部栄養学科・教授 平成 16 年 4 月　徳島大学大学院ヘルスバイオサイエンス研究部・教授		
会員番号:	0091027570	入会年度:	

2. 研究業績要旨(1,000 字以内)

食品中の抗酸化成分は、加齢性疾患や老化過程に関与する酸化ストレスを制御することにより、機能性を発揮することが期待されている。しかし個々の成分について、生体への吸収代謝および標的部位への蓄積や、その作用機構には不明な点が多い。したがって、ヒトでの最終的な機能性評価は困難であるとされている。この問題を解決するには、抗酸化成分の生体利用性を明らかにし、その作用機構を分子・細胞レベルからヒト臨床レベルまで統合して理解することが必要である。本研究は、酸化ストレス制御に関わる食品抗酸化成分として植物性色素であるカロテノイドとフラボノイドを主な対象として、酸化ストレスの関与が示唆される各種疾患の予防因子としての機能を評価することをめざした。カロテノイドについては、ビタミン A に代謝変換されずに皮膚中に蓄積した β-カロテンが、直接的な活性酸素(一重項酸素)消去作用を発揮することにより、コラーゲン分解酵素発現抑制を介して皮膚の光老化を抑制することを動物実験で実証した。フラボノイドは、消化管上皮細胞からの吸収過程で抱合体への代謝変換が起こること、抱合体代謝物はアグリコンの前駆体として血流に存在し、脱抱合反応により活性化されることを明らかにした。野菜から日常摂取するフラボノイドであるケ

ルセチンの抗動脈硬化作用には、ヒト動脈硬化巣に局在するマクロファージを標的とした酸化酵素の発現抑制が関わることを明らかにした。次に、食事由来ケルセチンの標的組織として脳神経系および骨格筋に着目し、ケルセチンの抗うつ様作用および筋萎縮抑制作用にはセロトニン代謝酵素阻害および筋タンパク質分解に働くユビキチン化酵素発現抑制がそれぞれ関与することを発見し、酸化ストレスとの関連を推定した。さらに経口摂取したケルセチンが、標的である脳および筋組織に蓄積することを動物実験で確認した。これらの研究成果は、食品抗酸化成分のヒト機能評価に有用な情報を与え、健康増進のための食品選択や次世代の機能性食品開発に貢献するものである。

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）

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(3) 過去 5 年間の本学会での活動状況

2012 年―現在　日本栄養食糧学会理事
2012 年―現在　日本栄養食糧学会中国四国支部・支部長
2007 年―2011 年　日本栄養食糧学会評議員

2011 年　日本栄養食糧学会大会ジョイントシンポジウム講演「フラボノイドパラドックス-代謝変換から機能性を考える-」

2010 年　日本栄養食糧学会大会ランチョンセミナー講演「食品抗酸化物質の生体利用性と酸化ストレス制御」

(4) 特記事項

受賞歴
1990 年 4 月　　日本農芸化学会奨励賞受賞
2010 年 4 月　　飯島食品科学賞受賞