

社団法人日本栄養・食糧学会 研究業績

<学 会 賞>

研究題目:(和)	動脈硬化症を予防する食品成分の生理機能の解明		
(英)	Clarification of physiological functions of various food components preventing atherosclerosis		
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研究業績要旨(1,000 字以内)

動脈硬化性心疾患は欧米ばかりでなく日本においても主要な死因の一つとなっており、その予防は国民の健康を維持する上で重要な課題である。申請者は長年にわたり動脈硬化症を予防すると考えられる種々の食品成分の作用機構の解明を目的として研究を行ってきた。動脈硬化症の最大の危険因子は高コレステロール血症である。コレステロール吸収を阻害し、血漿コレステロール低下作用を示す植物ステロールの研究では、コレステロール吸収阻害機構を世界に先駆けて提示した。最近では、植物ステロールの誘導体が内臓脂肪減少作用を示す機構も明らかにした。さらに、緑茶カテキンのコレステロール吸収阻害機構を初めて明らかにし、血漿コレステロールを低下させる食品素材としての利用に道を開いた。カテキンには摂食後高トリアシルグリセロール血症抑制作用もあるが、その機構は膜リバーゼ活性阻害によることが突き止められた。また、カテキンの肝臓トリアシルグリセロール低下や内臓脂肪蓄積抑制作用の機構も提示し、カテキンが多機能的に動脈硬化症を予防する可能性を示した。

ヒトの健康に関わりの深い食事脂肪に関する研究では、魚油に含まれるドコサヘキサエン酸(DHA)とエイコサペンタエン酸(EPA)では生理作用に違いがあり、前者は後者に比較し、血漿コレステロール濃度および体内リン脂質中のアラキドン酸減少作用が強いことを初めて示した。また、EPA や DHA 摂取に伴う摂食後高トリアシルグリセロール血症抑制作用の機構として、これまで信じられていた機構とは異なり、肝臓からのトリアシルグリセロール分泌の抑制により引き起こされることを明らかにし、論争の一石を投じた。続いて、グリセロールの特定の位置に特定の脂肪酸を結合した構造脂質の生理作用に関する研究では、EPA や DHA の結合位置の違いによりその生理機能を高めることができることを明らかにした。

このような動脈硬化症予防に関する研究に連携し、植物ステロールの難吸収性機構の解明、膜液コレステロールエステラーゼによる遊離コレステロール吸収促進機構の解明および、EPA や DHA の摂取形態による吸収率の違いとその機構の解明など、脂質吸収機構に関する基礎的研究も精力的に行い、生理活性の強い脂肪酸の有効利用やコレステロール吸収を抑制する新たな食品成分の開発に対する基礎的知見を与えた。

申請者の研究は、生活習慣病を予防、改善し、日本人の健康維持に大きく貢献すると考えられる。

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(3) 過去 5 年間の本学会での活動状況  
2003 年以降を記述します。

2006-2007 年 国際交流委員会委員

2006-2007 年 広報委員会委員

2004-2007 年 本部評議員

2003 年 参与

2005-2007 年 東北支部評議員

2003-2004 年 九州・沖縄支部評議員

2007 年 第 61 回日本栄養・食糧学会大会 シンポジストおよび座長

2007 年 第 41 回日本栄養・食糧学会東北支部大会 座長

2006 年 第 60 回日本栄養・食糧学会大会 座長

2006 年 第 60 回日本栄養・食糧学会九州・沖縄支部および平成 18 年度日本農芸化学会西日本支部合同大会、日本栄養・食糧学会九州・沖縄支部公開シンポジウム シンポジスト

2006 年 第 40 回日本栄養・食糧学会東北支部大会 シンポジストおよび座長

2005 年 第 59 回日本栄養・食糧学会大会 座長

2004 年 第 58 回日本栄養・食糧学会大会 座長

2003 年 第 57 回日本栄養・食糧学会大会 大会実行委員およびシンポジスト

(4) 特記事項

日本農芸化学会、平成 3 年度 日本農芸化学奨励賞 「ステロールの吸収機構に関する研究」