

茶系飲料に含まれるテアニンの定量と抗酸化作用の評価

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Quantification of theanine in tea beverages and evaluation of its antioxidant activity

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Abstract

In today's Japan, many individuals live in what is known as a stress society, where daily stress has become a common occurrence. The causes of stress vary from person to person and may be attributed to factors such as social environment and human relationships. Excessive stress can result in oxidative stress, which can have significant impact on both the mind and body. In fact, severe stress can lead not only to sleep disorders such as insomnia but also to mental illnesses such as depression. Theanine, a component derived from glutamic acid and ethylamine found in the roots of tea plants, is present in green tea and contributes to its umami taste. It has been approved as a functional food for stress and sleep. Theanine is known for its relaxing effects and its ability to improve sleep quality. Studies have also indicated its effectiveness in treating mental illnesses such as schizophrenia and depression. By understanding the functionality of theanine and investigating tea-based beverages that can be ingested most efficiently, it is believed that we can contribute to the prevention of diseases associated with reactive oxygen species generated by stress. In this study, we first evaluated the antioxidant effects of theanine using electron spin resonance (ESR) equipment. Next, we measured the amount of theanine in tea beverages using a liquid chromatograph/fluorescence detector (LC/FL). The ESR results demonstrated that theanine exhibits antioxidant activity by inhibiting the generation of reactive oxygen species through copper ions. Moreover, we found that *Camellia sinensis*, represented by green tea and black tea, contains a significant amount of theanine.

Keywords : 電子スピン共鳴装置、蛍光検出器付液体クロマトグラフ、茶系飲料、テアニン
electron spin resonance, liquid chromatograph/fluorescence detector, tea beverage, theanine

I 緒言

現在のわが国は、ストレス社会と言われるほど、多くの人が日々精神的や肉体的ストレスを抱えながら生きている。社会環境や人間関係など、精神的ストレスを引き起こす原因は人それぞれで多岐にわたるが、過度のスト

レスは心身ともに、大きな影響を与える。重度な精神的ストレスが引き起こす疾患として、うつ病などの精神疾患が挙げられる。厚生労働省が行った患者調査（平成29年10月）によると、躁うつ病を含む気分（感情）障害の総患者数は、入院、外来を含め約128万人となっており、他の精神疾患においても患者数は年々増え続けている。