Relaxation and immunity enhancement effects of γ-Aminobutyric acid (GABA) administration in humans

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Abstract. The effect of orally administered γ-Aminobutyric acid (GABA) on relaxation and immunity during stress has been investigated in humans. Two studies were conducted. The first evaluated the effects of GABA intake by 13 subjects on their brain waves. Electroencephalograms (EEG) were obtained after 3 tests on each volunteer as follows: intake only water, GABA, or L-theanine. After 60 minutes of administration, GABA significantly increased alpha waves and decreased beta waves compared to water or L-theanine. These findings denote that GABA not only induces relaxation but also reduces anxiety. The second study was conducted to see the role of relaxation and anxiety effects of GABA intake on immunity in stressed volunteers. Eight alcoholic subjects were divided into 2 groups (placebo and GABA). All subjects were crossing a suspended bridge as a stressful stimulus. Immunoglobulin A (IgA) levels in their saliva were monitored during bridge crossing. Placebo group showed marked decrease of their IgA levels, while GABA group showed significantly higher levels. In conclusion, GABA could work effectively as a natural relaxant and its effects could be seen within 1 hour of its administration to induce relaxation and diminish anxiety. Moreover, GABA administration could enhance immunity under stress conditions.

Keywords: γ-Aminobutyric acid, brain waves, relaxation, stress, immunity, IgA

1. Introduction

γ-Aminobutyric acid (GABA) exists naturally in many kinds of foods at low levels while higher levels could be found in fermented food products. Therefore, production of natural GABA in high concentration could be produced by certain kinds of lactic acid bacteria [13]. Recently, GABA is used as a functional food ingredient in different kinds of foods in Japan due to its health benefits. GABA is one of the major inhibitory neurotransmitters in the central nervous system and has been found in several peripheral tissues [3, 12]. It is known to mediate pre-synaptic inhibition of primary afferent fibers in the motor system and may also be involved in post-synaptic forms of motor neuron inhibition [1]. Amino acid neurotransmitters are critical for the function of the central nervous system.