

The multiple physiological effects of γ -aminobutyric acid (GABA) as a functional food component have been recently reported. We previously reported that GABA upregulated the expression of type I collagen in human dermal fibroblasts (HDFs), and that oral administration of GABA significantly increased skin elasticity. However, details of the regulatory mechanism still remain unknown. In this study, we further examined the effects of GABA on elastin synthesis and elastin fiber formation in HDFs. Real-time PCR indicated that GABA significantly increased the expression of tropoelastin transcript in a dose-dependent manner. Additionally, the expression of fibrillin-1, fibrillin-2, and fibulin-5/DANCE, but not lysyl oxidase and latent transforming factor- β -binding protein 4, were also significantly increased in HDFs. Finally, immunohistochemical analysis confirmed that treatment with GABA dramatically increased the formation of elastic fibers in HDFs. Taken together, our results showed that GABA improves skin elasticity in HDFs by upregulating elastin synthesis and elastin fiber formation.

