

Functional analysis of novel genes expressed specifically in the early maturation of sesame seeds

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Sesame seeds of *Sesamum indicum* contain abundant oil, in particular, large amounts of unsaturated fatty acid oleic and linoleic acids. These unsaturated fatty acids lower the cholesterol level in the body. Because of their effects and antioxidant substances, attention has been paid to sesame seeds as health food. The regulation of fatty acid synthesis in oilseed crops is quite unknown. It is necessary to clarify these points to breed novel varieties with high contents of unsaturated fatty acids. Full-length cDNA libraries prepared from sesame seed of 1 to 3 weeks DAF, were subtracted with cDNAs from plantlets of 4 weeks after seeding. Each of 1,545 cDNA clones was sequenced. The function of novel genes expressed during the early maturation of sesame seeds was studied by the transformation of *Arabidopsis thaliana*. Thirteen genes for a transcription factor were identified; four were involved in ethylene signaling. Nine genes including aquaporin-like protein, putative uncharacterized novel protein and ethylene response factor were analyzed by overexpression of *A. thaliana*. *A. thaliana* overexpression strain for novel protein and aquaporin-like protein genes, respectively showed the increase of unsaturated fatty acids. The localization of these products was investigated by the induction of the expression vectors for GFP fusion protein into onion cells and sesame seeds with a particle gun.

Biography

Motonobu Yoshida has received a PhD degree from Nagoya University, Japan and has worked for about two years at Max-Planck-Institut für Biochemie, West Germany as a postdoctoral fellow. He is a professor of Faculty of Agriculture, Kinki University, Japan. He has published more than 40 papers in reputed journals.

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