

**Shiseido Discovers Stimulatory Effect of KODA on Rhizogenesis of
Cuttage in Joint Research with Sumitomo Forestry Co., Ltd.
~Successful in Raising the Cutting Propagation Rate of
Somei-yoshino Cherry Trees (*Prunus yedoensis*)~**

Shiseido Co., Ltd. (Head Office: Chuo-ku, Tokyo; hereinafter “Shiseido”), in conducting joint research*¹ with Sumitomo Forestry Co., Ltd. (Head Office: Chiyoda-ku, Tokyo; hereinafter “Sumitomo Forestry”), has discovered that the natural plant fatty acid KODA (Ketol-Octadecadienoic Acid), which activates the formation many flowers, has a stimulatory effect on rhizogenesis (root formation) of cuttage as well. Shiseido has succeeded in significantly increasing the cutting propagation rate of Somei-yoshino cherry trees (*Prunus yedoensis*) for which root formation has been unstable.

Shiseido will work on propagation of not only cuttage of Somei-yoshino but also endangered species and useful trees in the future.

- *1 Joint research promoted under “Global Environment Research Fund” Greenhouse-gas Sink/Source Control Technologies research project by the Japanese Ministry of the Environment
Theme: Enhancement of CO₂ sinks by improvement of afforestation technology in tropical forest

Summary and Research Background of KODA

Plants produce various fatty acids from linolenic acid to oxylipin. Previous Shiseido research has shown that one kind called KODA (Figure 1) is a component having a stimulatory effect on flower initiation of many plants.*² Subsequently, results of research carried out on new physiological effects of KODA revealed the stimulatory effect on root formation of cuttage. One of these results, the “stimulatory effect on rhizogenesis of cuttage of Somei-yoshino (*Prunus yedoensis*)” is planned to be announced at the annual meeting of the Japan Society for Bioscience, Biotechnology, and Agrochemistry (JSBBA).

*2 Reference literature: *Regulation of Plant Growth & Development* Vol. 40, No. 1, 90-100, 2005

Stimulatory Effect on Rhizogenesis of Somei-yoshino Cuttage

Somei-yoshino was bred between Edo-higan (*Prunus pendula*) and Oshima-sakura (*Prunus speciosa*) at the end of the Edo era. Recognized for its large blossoms blooming densely on the entire tree and their beauty when they fall, since the Meiji era Somei-yoshino have been planted throughout Japan and are familiar to all Japanese people as a typical scenic sight in spring. However, Somei-yoshino cannot be multiplied by seeds since it is an F1 hybrid and is unstable in taking root; therefore, propagation has been always conducted by grafting, which requires expertise. In addition, Somei-yoshino is a variety with a shorter lifespan. For such reasons, the development of a practical cuttage technique would greatly contribute to the propagation of Somei-yoshino.

According to Shiseido research, the rooting rate of Somei-yoshino cuttage varied according to the age of trees and the year the cuttings are planted, whereby a maximum 30% of cuttings took root. While existing rooting agents were unable to improve the rooting rate, this rate was increased twofold or threefold by spraying KODA on cuttings at planting (Figure 2). As indicated by other research, it is presumed that there is little possibility for KODA to have a direct root-inducing action; therefore, the increased rate may have been caused by an activator action related to a dormancy-breaking effect. Over the course of a three-year observation on five stocks selected from among root cuttings sprayed with KODA, no abnormalities in growth were observed. In addition, flower initiation was observed for KODA-sprayed plants in the second year after planting even though Somei-yoshino, which is grown from cuttage, tends to produce no flowers for several years. This appears to be brought about by the stimulatory effect of KODA on flower initiation.

New Aspects of Shiseido Research

While existing rooting agents are all known to be produced using amino-acid serial plant hormone auxin, through this research Shiseido has demonstrated the remarkable stimulatory effect on inducing root formation of cuttings using the fatty acid component that is completely different from existing ones. This finding represents a significant achievement academically as well.

Moreover, this research indicates the possibility of technology for making blossoms of potted ornamental trees bloom earlier and thus could be a useful technique since there are no flowers when cuttage is performed and thereafter for several years.

Universality of Research and Future Endeavors

Shiseido confirmed that this technology applies not only to Somei-yoshino but also to many other varieties. In fact, its effect on propagation of some endangered species and useful trees already has been confirmed. Moving forward in these endeavors, this technology holds promise in the future in other areas such as a genetic conservation of rare tree species, forestation of useful trees that are limited to industrial usage because of the difficulty of root formation, as well as afforestation in unsuitable soil.

Figure 1. KODA produced from linolenic acid, a plant fatty acid

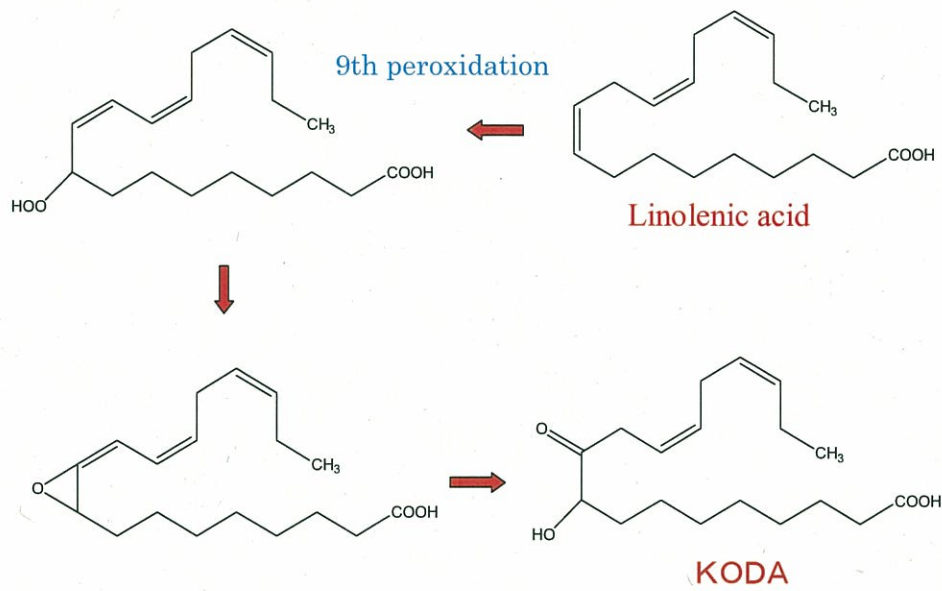


Figure 2. Stimulatory effect on rhizogenesis of Somei-yoshino cuttage by KODA



Comparison

10 μ M KODA

100 μ M KODA