# Capsaicinoids and the breeding of Capsicum

Keiko Ishikawa
Plant Cell Biotechnology Laboratory, Department. of Horticulture, Chiba University
648 Matsudo, Matsudo-shi, Chiba 271-8510, japan

Summary

In the breeding of Capsicum, the control of capsaicinoid contents is one of the most important subjects.

In order to clarify the factors controlling capsaicinoid biosynthesis, we determined the contents of the phenolic intermediates of capsaicinoids in the placentae. As plant materials, Capsicum annuum L. cv. 'Jalapeno', which is a famous pungent pepper, and cv. 'Shimofusa', which is a non-pungent bell-type pepper, were used. Even in the placentae of the 'Jalapeno' pepper, the contents of C6-C3 phenylpropanoids and vanillylamine were 1/25 and 1/80, respectively, the contents of capsaicinoids. Our results showed that the pool sizes of these phenolic intermediates were quite limited in the placentae.

Then as another approach, the genetic analysis of capsaicinoid contents were showed. Non-pungent C.annuum L.cv. 'Oh-natsume' (ON) and pungent C.chinense Jacq. PI159236 (P1) were used. In the back-cross generation (ON//ON/P1), 22 plants with non-pungent fruits and 31 plants with pungent fruits were produced, with a segregation ratio of 1: 1 ($0.25<P<0.5$). RAPD analysis showed many polymorphic bands, but none of them were linked with capsaicinoid contents. Further investigation will be necessary.

As a new system for the breeding of Capsicum, a method for chromosome doubling of Capsicum by colchicine and the characters of tetraploid Capsicum were given. Tetraploid plants of C.annuum L. cv. 'Shishitoh' produced the fruits of reduced size. But the contents of capsaicinoids and their phenolic intermediates were the same in the both fruits of diploid and tetraploid 'Shishitoh'. It is concluded that chromosome doubling can be used in the breeding of non-pungent bell pepper.