

## Crystal Structure Analysis of Water-Soluble Chlorophyll Protein from *Raphanus Sativus var. hortensis*

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A water-soluble chlorophyll protein (WSCP) was first extracted by Yakushiji et al. from the leaves of *Chenopodium album*. The protein contains chlorophylls a and b, but no carotenoids. It has been found that WSCPs are contained in Brassicaceae plants as well. Although some physicochemical and biochemical characterizations of WSCPs have been performed, almost nothing has been determined in regard to the physiological function of these proteins. In recent studies, it was suggested that the WSCPs from cauliflower and Brussel sprouts may be identical to a drought-induced 22-kDa protein in rapeseed, BnD22, which possesses a motif of the Kunitz-type proteinase inhibitor family. Although WSCPs from cauliflower, rapeseed, Brussel sprouts, and *L. virginicum* possess the motif, those from cauliflower and Brussel sprouts have been reported not to inhibit trypsin. On the other hand, it has been speculated that BnD22

controls proteolytic pathways in plants, based on its ability to slightly inhibit chymotrypsin activity.

In order to determine the structure of WSCP, we purified WSCP from veins and petioles of radish (*Raphanus sativus var. hortensis*).

Rod crystals grew by vapor diffusion in two to three months in 0.1 M sodium citrate (pH 6.2), 0.5 M ammonium sulfate, 1.0 M lithium sulfate and a WSCP concentration of 2 mg / ml. The space group is  $C222$  or  $C222_1$  with cell dimensions  $a = 101$ ,  $b = 190$ ,  $c = 92$  Å. Data collection was carried out on BL41XU at SPring-8. The wavelength used was 0.708 Å and the distance between the crystal and the detector was 560.0 mm. Data processing is now ongoing.