

Wasaby (*Wasabia japonica*): A Natural Antimicrobial Agent for Food Preservation

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Wasabia japonica is a Brassicaceae, used to prepare Japanese dishes and other foods more flavorful by adding spice. Wasabi is reached of allyl isothiocyanate (ATC), that inhibit microbial growth, and for this reason could be used as a new product for preserving food against spoilage.

Wasabi (*Wasabia japonica*), also called Japanese horseradish, is a member of the plant family called the Brassicaceae, formerly Cruciferae. *W. japonica* is often substituted by horseradish (*Armoracia rusticana*) although is a different plant. *W. japonica* is believed to be native to Japan and Sakhalin Island and north of Japan. It grows naturally in the gravel beds of mountain streams and requires a specific environment to thrive naturally in this habitat. There is another *W. japonica* species that grows in swampy ground, but produces inferior quality stems. Wasabi is generally used as a sauce that makes sushi or other foods more flavorful by adding spice. Chemically wasabi, as well as *A. rusticana*, contains the volatile allyl isothiocyanate (ATC), which is produced by hydrolysis of natural thioglucosides. The ATC is present on in roots, stems and leaves of the *W. japonica*. The ATC gives the wasabi's pungency. The ATC inhibits microbial growth, and for this reason could be used as a new product for preserving food against spoilage. Research has shown that such isothiocyanates inhibit microbial growth, perhaps with implications for preserving food against spoilage and suppressing oral bacterial growth [1]. Wasaby, thanks to its characteristics could be used as a new product for the production of new antimicrobial packaging for food preservation (i.e., fish or meat). In fact, there is a growing interest in the development of antimicrobial packaging materials containing natural antimicrobial agents [2,3]. Antimicrobial packaging provides an additional and final barrier that can prevent the growth of food-borne pathogens [4,5]. Several studies were performed on the antibacterial activity of wasabi against *E. coli* 0157:H7 [6], *L. monocytogenes*, *Salmonella montevideo* [7,8], *Staphylococcus aureus*, *Escherichia coli* and against mesophilic bacteria and coliforms [9]. The results showed that AITC can substantially reduce the numbers bacteria in fresh food. For these reasons the wasabi could be an interesting product to be added as natural antimicrobial agent. In my opinion the use of natural substances to be used alone or added to films with antimicrobial power to combat the onset of potentially pathogenic bacteria or to lengthen the shelf-life of a highly perishable product such as fish is fundamental for two reasons: the first is linked to lower consumption of synthetic chemicals that often have no side effects on man and secondly because the use of natural substances as well as being safer for humans is also safer for the environment because it is more biodegradable.

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