

Elucidation of the active carbohydrate structures and functions of the polysaccharides possessing modulating activity on immunocompetent cells in Peyer's patches from traditional Japanese herbal medicines

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Peyer's patches present in upper intestinal tract play an important role as inductive site in mucosal immune system. Dysfunction of immunocompetent cells in Peyer's patches involves not only to down-regulation of protective sIgA production against infection in local mucosal sites but also to induction and/or advance of food allergy and autoimmune diseases. We have isolated several modulating arabinogalactan-containing polysaccharides for the functions of immunocompetent cells in murine Peyer's patch cells from rhizomes of *Atractylodes lancea* and aerial parts of *Astragalus mongholicus*. It has been clarified that these polysaccharides express the modulating activity through long β -D-(1 \rightarrow 6)-galactosyl oligosaccharide side chains on β -D-(1 \rightarrow 3,6)-galactan moieties. Recently, we also have found the other modulating polysaccharides from roots of *Glycyrrhiza uralensis*, and the polysaccharides show the different modulating activity to the immunocompetent cells in Peyer's patches from those of *A. mongholicus*. These facts suggest that the clarification of carbohydrate chains in the active polysaccharides for expression of the different modulating activity leads to know valuable information on the carbohydrate structures for artificial regulation of mucosal immune system. Nine kinds of the active polysaccharides were isolated from *G. uralensis*, 3 polysaccharides of them were grouped to pectin-type polysaccharides, of which the ramified regions were the active site for expression of the activity. β -D-(1 \rightarrow 3,6)-galactan moieties in all the polysaccharides did not contribute to expression of the activity, and it was assumed that the different carbohydrate structures in the active polysaccharides from *G. uralensis* involved to the activity from those of *A. mongholicus*.