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The role of F(ab)2 and Fc fragments of HA2-specific antibodies in the recovery from influenza infection

Content

Antibodies (Ab) are crucial molecules in the protection of organism against influenza infection. Nowadays, elicitation of cross-protective antibodies targeting the HA stalk domain becomes a promising approach to develop a universal vaccine. Besides virus neutralizing (VN) Abs, the broadly reactive non-neutralizing antibodies contribute to elimination of virus and recovery from influenza infection. In comparison with strain specific VN Abs, anti-HA2 antibodies involve their Fc-dependent effector function to mediate the antiviral protection. Many studies focus on the role of epitope specificity of anti-stem Abs and on the mechanisms stimulated by their Fc fragment effector function.

In our work, we employed fragmentation of monoclonal antibody specific to HA2 gp of influenza A virus by ficin protease. Ficin showed to be the most effective proteolytic enzyme for digestion of mouse IgG1 molecules to obtain bivalent fragments F(ab)2, retaining their antigen binding activity, and Fc fragments responsible for their effector function. We prepared such fragments from two HA2 specific MAbs, the one of which had fusion-inhibition activity. These MAbs were used for examination of the contribution to protection mediated by paratope, i.e. F(ab)2 fragment and their Fc fragments to the clearance of virus from mice infected with lethal dose of IAV.

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