

Chaperone-Like Effect of Polyzwitterions on the Interaction of C1q with IgG

Ivo Ivanov^a, Ivanka Tsacheva^{b,*}, Vishnia Stoyanova^b, Miroslav Nikolov^b,
Magdalena I. Tchordadjieva^b, Svetla Petrova^b, Latchezar Christov^a,
Ventsislava Georgieva^a, and George Georgiev^a

^a Sofia University, Faculty of Chemistry, 1 James Bouchier Aven., 1164 Sofia, Bulgaria

^b Sofia University, Faculty of Biology, Department of Biochemistry, 8 Dragan Tsankov St., 1164 Sofia Bulgaria. Fax +359-2-865-6641. E-mail: itsacheva@biofac.sofia-uni.bg

* Author for correspondence and reprint requests

Z. Naturforsch. **64c**, 149–154 (2009), received August 18/September 12, 2008

The amphiphilic polyzwitterion (PZ) poly(ethylene oxide-*b*-*N,N*-dimethyl(methacryloyloxyethyl)ammonium propanesulfonate), zwitterionic surfactant (ZS) *n*-dodecyl-*N,N*-dimethyl-3-ammonium-1-propanesulfonate, and zwitterionic monomer (ZM) *N,N*-dimethyl(methacryloyloxyethyl)ammonium propanesulfonate were analyzed for their suggested chaperone-like effect on the interaction of C1q and IgG. Our results proved that the PZ retarded the C1q interaction with IgG, demonstrating a specific protein-folding helper effect. The ZS enhanced this interaction, when the ZS concentration was lower than the critical micelle concentration (*CMC*), and retarded it, when the ZS concentration was above the *CMC*. The ZM, with no self-assembling ability, did not influence this interaction. These results support the hypothesis of a hydrophobic interaction between Pts and hydrophobic domains of partly denatured protein molecules. The amphiphilic self-assemblies, formed by polyzwitterionic macromolecules or zwitterionic surfactants, have the ability to transform the hydrophobic domains of the protein molecules into hydrophilic ones, covering them with their hydrophilic parts.

Key words: C1q Complement Component, Immunoglobulin G, Polyzwitterion, Zwitterionic Surfactant