P-38: Biosensing albumin with new benzylidene derivatives - investigation of fluorophore-protein interactions

Małgorzata Kowalewska[*,1], *Patryk Szymaszek*[1], *Filip Petko*[1,2], *Mariusz Galek*[2], *Joanna Ortyl*[1,2,3]

[1] Cracow University of Technology, Faculty of Chemical Engineering and Technology, Cracow, Poland
[2] Photo HiTech Ltd., Cracow, Poland
[3] Photo4Chem Ltd., Cracow, Poland

*m.kowalewska@student.pk.edu.pl

Albumins are the most common proteins in blood plasma. They play an important role in the transportation of various substances in the body, such as amino acids, fatty acids, drugs, or metabolites, thanks to active sites capable of binding ligands. Albumin levels in the blood are an indicator of health, and their imbalances may indicate various diseases, such as liver disease, kidney disease, malnutrition, or diabetes. Bovine serum albumin (BSA) is a well-studied model protein with a structure homologous to human serum albumin, and it is widely used in research, including protein and ligand binding. In its structure, it has two tryptophan residues responsible for the internal fluorescence of the protein, which can be quenched by various fluorophores. Spectroscopic detection of proteins is simple, fast, and selective compared to other methods used. Hence, they are widely studied and have found application in fields such as medicine, diagnostics, and biochemistry. Spectroscopic studies of benzylidene derivatives and studies of the interactions of these derivatives with bovine serum albumin have been carried out. Fluorophore-BSA interactions allowed us to determine binding parameters such as the number of binding sites, binding constant, Stern-Volmer constant, and molecular quenching constant.

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