AB044. Role of S100A16 and Annexin A4 proteins in maintaining membrane integrity

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Background: Maintaining the structural and functional integrity of membranes is essential for proper cells function. A recent proteomic study suggests that S100A16 and Annexin A4 (ANXA4) proteins participate to maintain the membrane integrity in the outer segment of the photoreceptors in the eye. The protein S100A16, recently discovered, is one of the S100 family proteins for which no protein and membrane interaction has yet been identified. Furthermore, maintain of the membrane integrity is calcium sensitive process. The main objective consists of studying the membrane interactions of S100A16 and ANXA4 proteins to better understand their functions in maintaining membrane integrity. Specific objectives are: (I) to achieve the purification of these proteins, (II) to gather information on their membrane interactions, and (III) to study the influence of calcium on these interactions.

Methods: The S100A16 protein is obtained by cleavage followed by purification on a His-Trap column. Membrane interactions are studied with the Langmuir monolayer model. After measurement of the saturating concentration, the protein binding parameters, that to say the maximum insertion pressure and synergy, will then be determined in the presence of several phospholipids representative of physiological membranes.

Results: The S100A16 protein was obtained with a purity greater than 99% and its saturating concentration is 0.5 µM. Biophysical studies with different phospholipids in monolayer are currently in progress.

Conclusions: Obtaining the S100A16 protein with a high purity allows carrying out the biophysical study in order to understand its membrane interactions. The purification of ANXA4 and the biophysical study with different phospholipids of this protein alone and in complex with the S100A16 protein will allow a better understanding of the membrane behavior of these proteins, as well as their roles in the maintenance of membrane integrity.

Keywords: S100A16; ANXA4; biophysics; Langmuir; monolayer

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