In vitro production of peroxynitrite by haemocytes from marine bivalves: C-ELISA determination of 3-nitrotyrosine level in plasma proteins from Mytilus galloprovincialis and Crassostrea gigas

ABSTRACT

Through the use of C-ELISA, we have demonstrated that 3-nitrotyrosine levels of plasma proteins from mussel M. galloprovincialis and oyster C. gigas were raised by 5.8 and 7.5 times respectively, with the exception of the phagocytosis of zymosan particles.

INTRODUCTION

Deficiencies in the fly visual system are a result of the repetitive, retinotopic structure of four layered structures: the lamina (eye eye), medulla (ear eye) – cilia feces, which carry images of insects and birds, respectively, and each layer consisting of thousands of columns with the same number and types of neurons. While we have a thorough understanding of the anatomy of these columnar elements, there is limited knowledge about their visual response properties, except for the presence of large lamina monopolar cells. The fibers' small diameter makes it challenging to capture recordings within the cell culture system. 2-deoxy-glucose activity staining is the primary method of obtaining data on columnar neurons, and it is challenging to assign specific cell types to them. In spite of this, there are at least three major parallel processing streams in the fly optic lobes that are known from anatomical evidence: the first two pathways originate from receptor cells R1-6 and are linked by lamina cells L1 and L2 and transmedulla neurons to the wing. These two streams are believed to be involved in motion processing. Retirinal cells R7 and R8 and lamina cells L3 are used to project mainly to the lobula through the third pathway, which is believed to be involved in the processing of color and form. Among the most studied cells of the fly visual system are the large lobula plate tangential cells (LPTCs), which are relatively easy to record from within the cell wall due to their large diameter axons (around 8-10 microns). A large dendritic arbor is a feature of LPTCs, which allows them to receive input from various columnar elements that may be present in the medulla and lobula. LPTCs are usually directed towards direction: they depolarize when activated by motion in the preferred direction, and become impeding when motion along the opposite or null direction initiates. We propose that this direction selectivity is due to the antagonistic action of local elements tuned to opposite directions of motion. It is believed that the input elements have a narrow selection of direction for motion. The LPTCs exhibit a significant increase in direction selectivity due to subtractive inhibition on their dendrites. This is demonstrated by pharmacological experiments that block the inhibitory input with PTX. In such cases the response to the preferred direction is increased and the reaction to null direction reversed, causing an excitation; however, due to limited intracellular recordings for the reasons stated above, all conclusions regarding the input elements of tangential cells are indirect evidence only. The dendrite of the input elements has been shown to have two distinct transmitter receptors, with one being a cholinergic receptor with nicotinic pharmacological profile and the other being an -aminobutyric acid (GABA) receptor. By using antibodies against the ARD subunit of NISCARs and the RDL subunité of the GABA receptor in Drosophila, we were able to determine their distribution in the fly visual system. Next, immunocytochemical data of antibody staining against nAChRs, GAB receptors und GSH and GADA as an inhibitory neurotransmitter is presented. The immunoreactivity of these receptors and GABA in the fly

visual system is analyzed, and the potential pharmacology and cell types of the motion pathway are discussed.

CONCLUSION

Research indicates that the GFP-BLM fusion protein reduces SCE frequency in BS cells and acts as a helicase by activating its nucleotide domain. Instead of over-expression, the C-terminal domain encoded function in BLM is responsible for the stable nucleolar localization; mutations and deletions in the helicase domain have a dominant negative impact on the SCE frequency as do increases in chromosome abnormalities, while N-determination deletion has relatively little effect. According to the data, BLM's helicase activity and C-terminal domain directed nucleolar localization are crucial for genomic stability. The NBs appear to be storage or regulatory sites for BRM, but they are not necessary for their operation.