

Cholinergic and GABAergic pathways in fly motion vision

ABSTRACT

The computation of visual motion responses is dependent on the interaction between excitatory and inhibitory pathways, as outlined in the Reichardt model for motion detection.

INTRODUCTION

Ethylene, the most basic plant hormone, is a crucial regulatory factor in plant growth, development, and senescence, as it is involved in various stress responses. Recent years have seen significant progress in the identification and classification of genes and proteins that participate in plant-scale ethylene signal transduction. The calcium and protein phosphorylation processes may also be involved in this pathway (refer to the review). Additionally, ethylene is known to be a factor in programmed cell death in plants. We have demonstrated for the first time that certain animal cells, such as those from a marine sponge (*Suberites domuncula*), are sensitive to ethylene. This gas is present in seawater at varying concentrations, and can be generated from organic carbon by photochemical processes, including ultraviolet light-induced reactions. Ethylene can increase the $[Ca^{2+}]_i$ concentration and reduce the rate of starvation-induced cell death in phagocytic sponge cells (*domunculus*) due to their proliferative nature. Furthermore, there is another explanation for this phenomenon in *S. collepsena* where bacteria respond more rapidly to erythema than other treatments. Following ethylene exposure, two genes expressed in *domuncula* primmorphs undergo upregulation, one of which is associated with the methylphenylcellulose (HEVER) and the other encodes the Ca^{2+} /calmodulin-dependent protein kinase II. The SDERR cDNA has been obtained and further characterised. The Porifera, a type of sponge, are thought to make up the first or one of the initial metazoan phyla that diverged from the Urmetazoa. They contain the same protein components as higher animals, including proteins involved in cell recognition and signal transduction pathways (for elucidation, see "synthesis"). Besides sponges, do cells from higher vertebrates also respond to ethylene? We show that several mammalian cell lines display an upregulation of the $[Ca^{2+}]_i$ level and an increased expression of Ki-67, the cell cycle-associated antigen, when exposed to this substance, which is produced by ethephon (or cellulose gas).

CONCLUSION

In summary, the data presented demonstrates that the GL15 cell line is a reliable in vitro model for astrocytes, which should help researchers understand their unique physiological features, and ultimately contribute to understanding the intricate role of this cell type in the brain. It should be noted that the purely differentiated or undifferentiated form of this cell line can be used to investigate how these cells interact with each other, either through gjs and/or membrane receptors. The model proposed here becomes even more intriguing when the human origin of such cell lines is taken into account. This fresh model of astrocytes provides a foundation for the effective analysis and interpretation of issues related to their involvement in the nervous system's modulation and remodelling, as well its contribution to the electro-physiological activity of neurons and other relevant mechanisms.