

## Cancerology and the sea star Igkappa gene: Effects against Human MSC cells

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### **Abstract**

*It was shown 32 years ago that the sea star axial organ cells (AO cells) produced a spontaneous cytotoxicity against mouse cancerous cells.*

*Recently, we discovered a sea star Igkappa gene with immune properties. This gene was inserted in a CMV (cytomegalovirus) and finally in a plasmid called « young » plasmid.*

*The induced « young » protein exerted a spontaneous cytotoxicity against Hela cells (cervix carcinoma cells), mouse tumoral cells and at a weaker degree against human Mesenchymal stem cells (MSC cells)*

## Introduction

In 1983, Luquet and Leclerc [1] shown that the axial organ cells (AO cells), exerted a spontaneous and induced cytotoxicity against mouse SP2 myeloma cells and MBL2 cells.

The AO cells included essentially lymphocytes and phagocytes [1] 30 years later, we discovered a sea star I $\kappa$  gene [2], with immune properties [3] The aim of the present work was to study the behavior of the « young » protein secreted by the sea star I $\kappa$  gene, an anti HRP protein, in front of human malignant (Hela cells), and healthy cells: MSC cells by the use of plasmids.

## Materials and Methods

Gene cloning in a cytomegalovirus (CMV) was done in Germany (Eurofins Genomics) [4] from the sea star I $\kappa$  gene [2], an anti-HRP gene. It constitutes the « promoter ». We recall the importance of anti-HRP epitopes synthesis and their relevance in Invertebrates.

Following steps as plasmid realization in correlation with the promoter, plasmid amplifications, transfections [5] were performed. Hela human cells (cervix carcinoma cells), human MSC cells. They were transfected by plasmids, after electroporation, at time t=0. They were observed at t=24 h at t=48 h. Gene expression: at time 4h after transfection, G418 antibiotics was added in some samples to test gene expression. G418 gene was included in the genomic map [2]. It replaces in a better way Western blots assay.

## Results

The protein « young », also named: invertebrate primitive antibody seems to exert a spontaneous cytotoxicity against Hela cancerous cells [4] and at a weaker degree against human MSC cells

A table summarizes the obtained results with human MSC cells.

|                |  |
|----------------|--|
| MSC cells      | electric treatment alone                             |
| 250.000 cells  | a) with control plasmid (survival cells)             |
| 160.000 cells  | b) with sea star I $\kappa$ plasmid (survival cells) |
| 50.000 cells   | Ratio survival cells                                 |
| 50.000/160.000 |  |
| 0,312          |  |

Gene expression: the addition of G418 (antibiotics) allows the expression of the sea star Igekappa gene in treated samples.

### **Conclusion**

It appears that the sea star Igekappa gene exerts a natural and spontaneous cytotoxicity against human malignant cells (Hela cells) at a high degree: 50-60 % of cytolysis and at a weaker degree in human MSC cells We observe a weak cytotoxicity of the « young » protein against human stem cells which prevents, from the present time, all therapy in human cancer one.

On the other hand it is obvious that the sea star Igekappa plasmid remains a potential candidate for further experiments in the domain of cancerology.

## References

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