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Short Communication

Evidence of Complement Decay-Accelerating Factor Transmembrane Isoform Gene of Complement Factor B of Complement Factor H Genes in the Sea Star *Asterias Rubens*: Three Vertebrate Regulators of Complement Pathways in an Invertebrate

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Abstract

The main components of Complement (alternative and direct pathway genes) correlated with mammal genes were discovered in the sea star genome. CR receptor gene was also found. We describe now the complement decay-accelerating factor transmembrane isoform gene: a regulator gene of Complement cascade. How genes are expressed? By which pathway? The presence of this last gene seems to indicate the direct pathway. But , on the other hand, Complement factor B gene was discriminated so that complement factor H gene in sea star genome, and these genes are implicated in alternative pathway. We may envisage that the two pathways co-exist in sea star immune response which leads to the formation of the sea star primitive antibody.

Keywords: *Sea Star; Complement Factor B Gene; complement Factor H Gene*

Introduction

Alternative and direct pathway genes correlated with mouse genes, were discovered in 2013 [1]: C1q subcomponent subunit A, C1q subcomponent subunit B, C1q subcomponent subunit C, C2 component, Complement C4B, Complement C3, Complement component C9, Complement C5, Complement component C8 Alpha chain, were found.

Later CR receptor was discovered [2].

How genes were expressed, by which pathway ? The discovery of complement decay-accelerating factor transmembrane isoform gene, we study now, seems to indicate the direct patway but Complement factor H gene and Complement factor B gene, we study also, indicate another pathway, as it was shown for mouse.

Materials and Methods

Sea stars *Asterias rubens* were obtained from the Biology Institute (Gothenburg University).

Immunizations to HRP (Horse-radish peroxydase) and genomic studies were already described [1].

Results and Discussion

Mouse complement decay-accelerating factor transmembrane isoform gene was found in non-immunized animals to HRP:

Control:Contig11310 sp|Q61476|DAF2_MOUSE Complement decay-accelerating factor transmembrane isoform OS=Mus musculus GN=Cd55b PE=2 SV=2

Mouse complement factor B gene was discriminated in control and immunized sea stars to HRP:

HRP:Contig16117|m.12266 sp|P04186|CFAB_MOUSE Complement factor B OS=Mus musculus GN=Cfb PE=1 SV=2

Mouse complement factor H was also discriminated in non-immunized sea stars to HRP:

Control:Contig9673 sp|P06909|CFAH_MOUSE Complement factor H OS=Mus musculus GN=Cfh PE=1 SV=2

Activation of Complement via the alternative pathway [3] represents one means of natural infection, in Mouse; it implies six serum proteins. The reaction initiates C3b , factors H and B which are present in sea star genome.

On the other hand the classical pathway is activated by an antigen-antibody reaction which has been also described in sea star immune model; it implies C1q mainly then C4, C2, found in sea star genome. These genes are mainly vertebrate genes.

So the alternative pathway and classical one are present and could co-exist in the sea star immune system, especially in the antigen-antibody reaction.

Bibliography

1. Leclerc M. "Complement genes in the asterids comparisons with the echinids (echinoderma)". *American Journal of Immunology* 9.1 (2013): 26-29.

2. Leclerc M and Kresdorn N. "Evidence of CR Receptor Gene in an Invertebrate". *International Journal of Cell Science* 1.1 (2016): 000105.

3. Panqburn MK. "Activation of complement via the alternative pathway". *Federation Proceedings* 42.1 (1983): 139-143.

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