# 特異的ペプチドによる精子活性化の分子的機構



# 1986 Fiscal Year Final Research Report Summary

## Molecular mechanism of sperm activation by species specific egg jelly pepetides

Research Project

### Project/Area Number

60480022

### Research Category

Grant-in-Aid for General Scientific Research (B)

### Allocation Type

Single-year Grants

### Research Field

動物発生・生理学

### Research Institution

Kanazawa University Faculty of Science (1986)
Teikyo University (1985)

### Principal Investigator

**SUZUKI Norio** Faculty of Science,Kanazawa University,Professor, 理学部, 教授 (20082133)

### Co-Investigator(Kenkyū-buntansha)

YAMAGUCHI Masaaki Faculty of Science,Kanazawa University,Research associate, 理学部, 助手 (60182458)

### Project Period (FY)

**1985 – 1986**

### Keywords

sperm activating peptides / speract / mosact / alloresact / egg jelly / ウニ / 呼吸

### Research Abstract

Species specific sperm activating peptides were purified and their amino acid sequences were determined. Mosact (Asp-Ser-Asp-Ser-Ala-Gln-Asn-Leu-Ile-Gly) and its two derivatives were obtained from the egg jelly of the sea urchin Clypeaster japonicus. Alloresact (Lys-Leu-Cys- Pro-Gly-Gly-Asn-Cys-Val) and its five derivatives were from Glyptocidaris crenularis egg jelly. Many new speract derivatives were purified from the egg jelly of sea urchins Hemicentrotus pulcherrimus, Anthocidaris crassispina, Pseudocentrotus depressus, Strongylocentrotus purpuratus and Lytechinus pictus. They are <Ser^(3,10)> -speract, <Ser^1> , <Ala^3> , <Gly^5> -speract, <Ser^(3,5,7)> , <Asp^(10)> -speract, <Ser^(3,5,7)> -speract, <Ala^3> , <Gly^5> -speract, <Ser^3> , <Thr^5> -speract, <Thr^5> , <Gln^(10)> -speract and Des- <Gly^1> -[ <Thr^5> , <Gln^(10)> ]-speract. Speract (Gly-Phe-Asp-Leu-Asn-Gly-Gly-Gly-

Val-Gly) and its derivatives do not cross-react with mosact or alloresact and vice versa. Addition of mosact to C.japonicus spermatozoa resulted in the rapid appearance of a newly-stained protein on SDS-polyacrylamide gels as well as speract did to spermatozoa of sea urchins belonging to the order Echinoida and alloresact did to G. crenularis ( in the order Arbacioida ) spermatozoa. Sodium ions were essential for this.

## Research Products (11 results)

All | Other

All | Publications (11 results)


[Publications] Shimomura,H.;Suzuki,N.;Garbers,D.L.: Peptides. 7. 491-495 (1986)

[Publications] Suzuki,N.;Yamaguchi,M.: Zoological Science. 3. 801-806 (1986)

[Publications] Yamamoto,R.;Ueta,N.;Suzuki,N.: Zoological Science. 3. 817-824 (1986)

[Publications] Suzuki,N.;Kurita,M.;Yoshino,K.;Kajiura,H.;Nomura,K.;Yamaguchi,M.: Zoological Science. 4. (1987)

[Publications] Suzuki,N.;Kurita,M.;Yoshino,K.;Yamaguchi,M.: Zoological Science. 4. (1987)

[Publications] Suzuki,N.;Kajiura,H.,Kurita,M.;Yoshino,K.;Yamaguchi,M.: in preparation.

[Publications] Shimomura, H., Suzuki, N. and Garbers,D.L.: "Derivatives of speract are associated with the eggs of Lytechinus pictus sea urchins." Peptides. 7. 491-495 (1986)

[Publications] Suzuki, N. and Yamaguchi, M.: "Species specific respiratory stimulation of sea urchin (Clypeaster japonicus) spermatozoa by an egg associated factor." Zoological Science. 3. 801-806 (1986)

[Publications] Yamamoto,R., Ueta, N. and Suzuki, N.: "Purification and characterization of cold-insoluble glycoproteins from porcine seminal plasma." Zoological Science. 3. 817-824 (1986)

[Publications] Suzuki,N., Kurita,M., Yoshino,K., Kajiura,H., Nomura,K. and Yamaguchi,M.: "Purification and structure of mosact and its derivatives from the egg jelly of the sea urchins Clypeaster japonicus" Zoological Science. 4. (1987)

[Publications] Suzuki,N., Kurita,M., Yoshino,K. and Yamaguchi, M.: "Speract binds exclusively to sperm tails and causes a mobility shift in a major sperm tail protein of sea urchins." Zoological Science. 4. (1987)


**URL:** https://kaken.nii.ac.jp/report/KAKENHI-PROJECT-60480022/604800221986kenkyu_seika_hokoku_


Published: 1988-11-09