

Studies on the mating substances in *Paramecium caudatum*: peptide analysis of mating reaction inducing factors.

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SUMMARY

The conjugation process of *Paramecium* is triggered by mixing the cells of odd (O) and even (E) complementary mating types. Mating agglutination, which is the first step in the conjugation processes, takes place through cell-to-cell sexual recognition via ciliary membranes located on the ventral surface of *Paramecium*. The mating agglutination is called the mating reaction. Indirect evidence suggested that the mating reaction is induced by the intrinsic ciliary membrane proteins, mating-type substances. However, no report has described success at isolation of mating-type substances. In this study, we prepared for mating reactive ciliary membrane fractions (CMFs) using a new method. The characteristics of the CMFs are summarized as follows: 1) the CMFs prepared from mating reactive cells have the ability to induce mating agglutination; 2) the CMFs prepared from both mating types induce the mating reaction in the E-type cells but not in the O-type; 3) the CMFs prepared from the mating non-reactive cells have no ability to induce the mating reaction. The banding pattern of SDS-PAGE showed that two sizes of polypeptide bands were presented in the mating reactive CMFs. They were, respectively, 58- and 52-kDa. Based on these results, we hypothesize that our method enables us to isolate only the mating reaction inducing factors for E-type cells. We think that the 58- and 52-kDa polypeptides might be components of the mating-type substances that complement the E-type of mating substances.