

## Spore germination and development in *Gelidiopsis variabilis* (GREV.) SCHMITZ

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The absence of cystocarps in *Gelidiopsis* has created much confusion in the systematic position of the alga. As each group has a definite pattern of spore germination, it is possible to sort out the confusion by following the method of tetraspore germination of the alga. During germination of the spore no formation of germ tube is observed and the spore contents undergo a number of divisions within the original spore wall to form a multicellular disc. Thus the mode of germination of the tetraspores of *Gelidiopsis* belongs to typus discalis as defined by INOH (1947). The systematic position of the alga is discussed.

*Key Index Words:* *Gelidiopsis variabilis*; *Rhodophyta*; *spore germination*; *systematic position*.

SCHMITZ (1895) appears to have been the only person who has studied female plants and reported the presence of cystocarps in the genus *Gelidiopsis*. He placed the genus near *Ceratodictyon*, in the Rhodymeniales. TAYLOR (1960) referred the genus to Gelidiales, while DAWSON (1961) puts it in the Gigartinales. PAPPENFUSS (1961) mentions that *Gelidiopsis* should not be referred to the Gelidiales, but it should be referred to Gracilariaceae of the Gigartinales. Thus the systematic position of *Gelidiopsis* is confusing.

Several authors have used spore development pattern to elucidate the systematic position of some confused genera and thus the spore germination is used as an aid to taxonomy. The present communication deals with germination of tetraspores and their possible bearing on the systematic position.

### Materials and Methods

*Gelidiopsis variabilis* (GREVILLE) SCHMITZ

growing in tide-pools in the intertidal region at Jaleshwar reef, Veraval, produces tetraspores in July and August. Immediately after collection, the tetrasporangial stichidia were kept on a slide left in a petridish filled with 100 ml of sterile seawater to which was added 1 ml of the antibiotic mixture prepared by the procedure given by RAO (1971).

After 24 hours, the stichidia were removed from the slides and the spores shed on the slides were cultured in Erd-Schreiber medium (FØYN 1934) in culture room.

Camera lucida diagrams of the different stages of spore germination were drawn at the bench level.

### Results and Discussion

Germination of the tetraspores were observed 24 hours after their liberation from the stichidia. The tetraspores are spherical and measure about 25-28 μm in diameter (Fig. 1 A). The spores were uninucleate and were densely pigmented.

The first division was transverse and the two cells further divide to form a group of cells. By a number of divisions of these cells a disc shaped germling was formed (Fig. 1 B-I). All the divisions of spore contents occurred inside the original spore wall.

From the lower end of the disc like structure thus formed, few rhizoids were developed, while from the upper surface an outgrowth was formed. This erect fila-

ment can arise from any part of the disc and thus it was not confined only to the centre. Thus the mode of germination of tetraspores in *Gelidiopsis* belongs to *Typus discalis* as defined by INOH (1947).

The present study of the germination pattern of tetraspores in *Gelidiopsis variabilis* is almost similar as that described for *Gracilaria verrucosa* (HUDSON) PAPENFUSS by OZA and KRISHNAMURTHY (1967). As the division of the spore contents takes

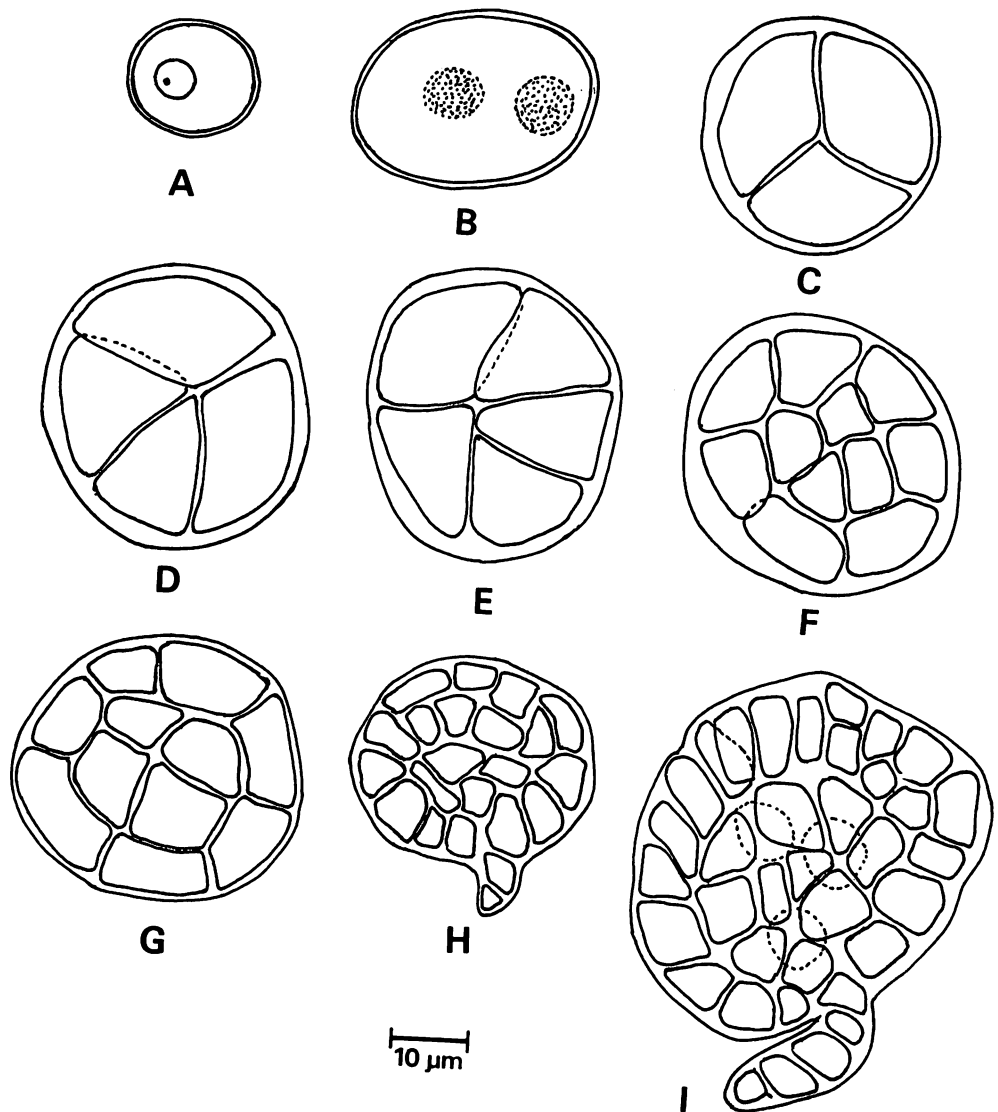


Fig. 1. *Gelidiopsis variabilis* (GREV.) SCHMITZ.  
A-I, Different stages of the germination of tetraspore.

place in the original spore wall itself and as no germ tube is formed as in the Gelidiales the present alga cannot be referred to the Gelidiales. In view of the division and formation of multicellular disc like germling inside the original spore wall, *Gelidiopsis* has to be referred to the Gracilariaceae of the Gigartinales.

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P. スリニバサ-ラオ\*・M. K. トリベディ\*\*: *Gelidiopsis variabilis*  
(GREV.) SCHMITZ の孢子発生

テングサモドキ属 *Gelidiopsis* においては囊果が知られていないため、分類学上の位置を決定することが困難である。孢子発生の様式は群によって決まっているので、これを調べることによって手がかりが得られる。*Gelidiopsis variabilis* の四分孢子は直接盤状型の発芽をすることが明らかになったので、スギノリ目オゴノリ科に置くのが適当である。(\*Central Salt and Marine Chemicals Research Institute, Bhavnagar 364002, India; \*\*Sir P. P. Institute of Science, Bhavnagar University, Bhavnagar 364002, India.)