

## 鞘毛藻科一新属——辐枝藻属\*

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**提要** 于1963年在内蒙古自治区包头市南,黄河堤坝北岸盐碱地积水洼中采得两号标本,经光镜观察表明,该新植物为鞘毛藻科一新属——辐枝藻属。辐枝藻为分枝丝状体,由匍匐部分和直立部分组成;匍匐枝彼此贴靠形成单层细胞厚的假薄壁组织;直立枝具粗壮的主轴和细的小枝;部分小枝末端细胞具一条长的鞘毛;每个细胞具一个周生、片状的色素体,蛋白核一至多个,具一个细胞核。该藻以动孢子营无性生殖,动孢子囊位于枝或小枝顶端。此新属仅一新种,为嗜盐辐枝藻。模式标本保存于中国科学院水生生物研究所。

标本为一种粘滑的黄褐色丝状藻。在显微镜下观察用福尔马林固定的标本,色素体呈鲜绿色;用鲁哥氏液处理,细胞内含物呈典型淀粉反应;用苏木精染色,每个细胞具一个细胞核,位于细胞中部的一侧。研究表明,它们为绿藻门鞘毛藻科的一新属及种,定名为嗜盐辐枝藻 *Radoramus halophilus* gen. et sp. nov.。

### 一、特征描述

#### 1. 辐枝藻新属 *Radoramus* gen. nov. (Fig. 1,2)

植物体为分枝的丝状体,由匍匐部分和直立部分组成;匍匐枝相互贴靠,形成单层细胞厚的假薄壁组织;直立枝由匍匐枝细胞的背侧长出,有明显的主轴和分枝之分、较粗壮的主轴有时在基部具假根,上部具互生侧枝和对生或轮生的分枝;部分分枝的末端细胞具一条长的鞘毛;每个细胞具一个周生、片状的色素体,老细胞中,色素体常充满整个细胞,有时不呈片状,蛋白核一至多个,细胞核单一;以动孢子营无性生殖,动孢子囊由分枝或小枝的顶端细胞形成。

#### 2. 嗜盐辐枝藻新种 *Radoramus halophilus* sp. nov. (Fig. 1,2)

仅有一种。植物体长达3cm,由匍匐枝和直立枝组成。匍匐枝细胞呈圆柱形或略不规则,宽5—7 $\mu\text{m}$ ,长13—18 $\mu\text{m}$ 。自匍匐部分长出幼枝,幼枝逐渐向前生长成老枝。幼枝主轴较细,细胞常长大于宽,圆柱形;细胞壁薄,两相邻细胞间的横隔壁处略缢缩;多为单侧生、互生的或不规则的分枝,罕有次级分枝;分枝自基部向前端渐尖,顶端细胞多为圆顶或略尖,无鞘毛。老枝主轴较粗,细胞常长宽相近,多为桶形、圆柱形或近倒梯形;细胞壁厚,宽31—35 $\mu\text{m}$ ,长35—39 $\mu\text{m}$ ,两相邻细胞间的横壁处有缢缩;多为不规则的侧生的分枝,常有次级分枝;分枝常较短,由1到数个细胞构成,分枝自基部向前并不渐尖;顶端细胞多

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为球形或近球形,宽 21—28  $\mu\text{m}$ , 长 17—30  $\mu\text{m}$ ; 少数顶端细胞前端有基部具短鞘的原生质鞘毛,其长可达 192—364  $\mu\text{m}$ ,基部短鞘宽 2.5—3  $\mu\text{m}$ ,长 8—10  $\mu\text{m}$ 。

植物体较上部的小枝顶端细胞有时形成一个(罕见两个)较大的、椭圆形的、先端略尖的动孢子囊,宽 8—16  $\mu\text{m}$ , 长 20—25  $\mu\text{m}$ ; 动孢子囊着生在常由 1—4 个细胞组成的小枝顶端或直接着生在侧枝上; 成熟的动孢子通过动孢子囊上部壁上的开孔释出。侧枝和小枝上有时形成球形或椭圆形、桶形的厚壁孢子,顶生或间生、一个或 2 个连(对)生; 球形的直径为 27—42  $\mu\text{m}$ ; 椭圆形、桶形的宽 18—40  $\mu\text{m}$ ,长 20—47  $\mu\text{m}$ 。

**采集地点:** 内蒙古自治区包头市南黄河堤坝北岸的盐碱地积水洼中,水浅、沙底, pH = 9。于 1963 年 10 月 22 日,由陈嘉佑、赵雄飞采得。模式标本为 MG14—15, 保存于中国科学院水生生物研究所藻类标本室。

### 1. *Radoramus* gen. nov. (Fig. 1, 2)

Thallus mucosus ramocus, affixus, e parte serpenti erectoque compositus; ramis serpenti gracilibus, in pseudo-parenchymate unistratoso collatenibus; esi erectis validis, interdum in basi rhizoidea emittentibus, eis lateralibus multis et densis, cellula apicalis nonnumquam pilifomibus et vaginantibus; chromatophoris singulis, parietalibus lamallatis, margine integris, pyrenoidibus 1-numerosis; nucleo nuico.

Zoosporangia et akineta utroque suppetens.

### 2. *Radoramus halophilus* sp. nov. (Fig. 1,2)

Frons usque 3cm longa; cellulo ramis serpentis modice cylindroco vel asymmetrico, 5—7  $\mu\text{m}$  lato, 13—18  $\mu\text{m}$  longo; cellulo ramis erecti cylindrico, 31—35  $\mu\text{m}$  lato, 35—39  $\mu\text{m}$  longo, transtro paro contracto, parieti crassiusculo; cellulo proxime basi parvo, 7—14  $\mu\text{m}$  lato, 9—22  $\mu\text{m}$  longo; ramulis quam ramis erectis graciliore, saepe alternatis vel secudis, cellulo cylindroco vel quadrangulo, transtro paro constricto parieti crassiusculo, 21—28  $\mu\text{m}$  lato, 17—30  $\mu\text{m}$  longo; ramis erectis lateralibusque plerumque passim ramulis brevis oppositis vel verticillatis instructis, cellulo quadrangulo vel breviter cylindrico, 5.5—18  $\mu\text{m}$  lato, 8—21  $\mu\text{m}$  longo; pilo 192—364  $\mu\text{m}$  longo, hoc in basi 2.5—3  $\mu\text{m}$  late, 8—10  $\mu\text{m}$  longo.

Ramulis superus apice cellulo interdum zoosporangium unum (raro duo) majorum ellipticum, in summo acutiusculum composito, 8—16  $\mu\text{m}$  lato, 20—25  $\mu\text{m}$  longo; basi cellula 1—4 interdum nullo, zoosporo mature per foramen in zoosporangio supero murale ejecto. Ramulis ramunculisque interdum utroque akineta globosa, elliptica vel orculiforminis, intercalaria apicifisa sola, interdum bina connata vel geminata compositis, oblongo orculiforme 18—40  $\mu\text{m}$  lato, 20—47  $\mu\text{m}$  longo, eo globose 27—42  $\mu\text{m}$  diametro.

Intramongolia: Baotou, in stagno, pH = 9, 22, X. 1963. J. Y. Chen, Z. X. Zhao. MG 14—15 (Typus HBI), in Herb. Inst. Hydrobiol., Acad. Sinica, depositus.

## 二、讨论与结论

鞘毛藻的主要特征是植物体附生或内附生，垫状或圆盘状，匍匐枝发达，常连结成单层薄壁组织状，直立枝退化；有些细胞具一条不分枝的长毛，毛基部具胶质鞘；有性生殖为卵式，合子被一层细胞包裹。本文报道的辐枝藻 *Radoramus halophilus* sp. nov. 少数

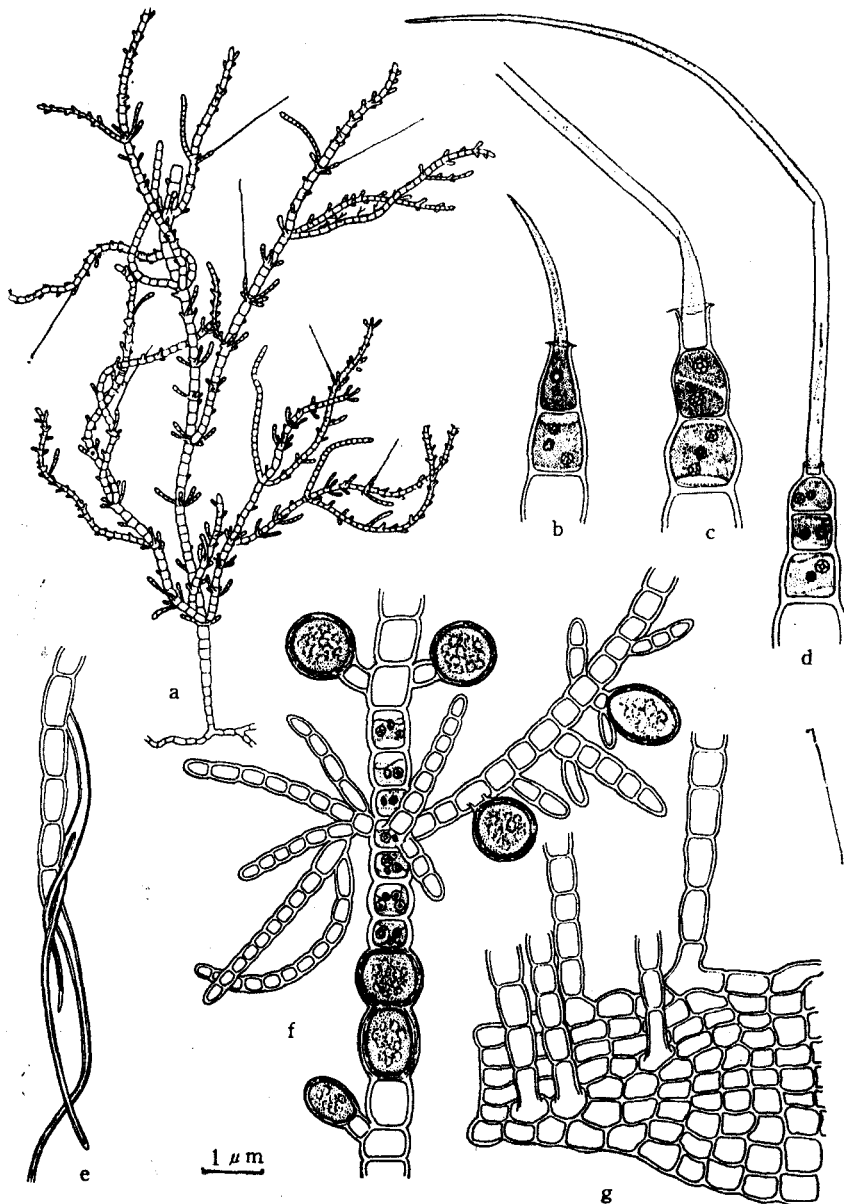


图1 嗜盐辐枝藻 *Radoramus* gen. nov.

- a. 植物体整体形态；b—d. 鞘毛；e. 假根；f. 植物体分枝，具厚壁休眠孢子；g. 匍匐枝。

小枝顶端细胞具一条很长的鞘毛，鞘毛的结构与鞘毛藻完全相同；植物体具不发达的垫状匍匐枝，也与鞘毛藻有相似之处。但此新植物与鞘毛藻又有明显区别：植物体直立枝发达；在少数小枝的顶端，有时具形态不同于营养细胞的椭圆形的、先端略尖的动孢子囊，动孢子从开孔释出；在主枝、分枝或小枝上常见呈球形、椭圆形、桶形的大形细胞，壁厚。此种厚壁细胞是厚壁休眠孢子。根据此新植物的上述特征，确定为鞘毛藻科的新属和新种。

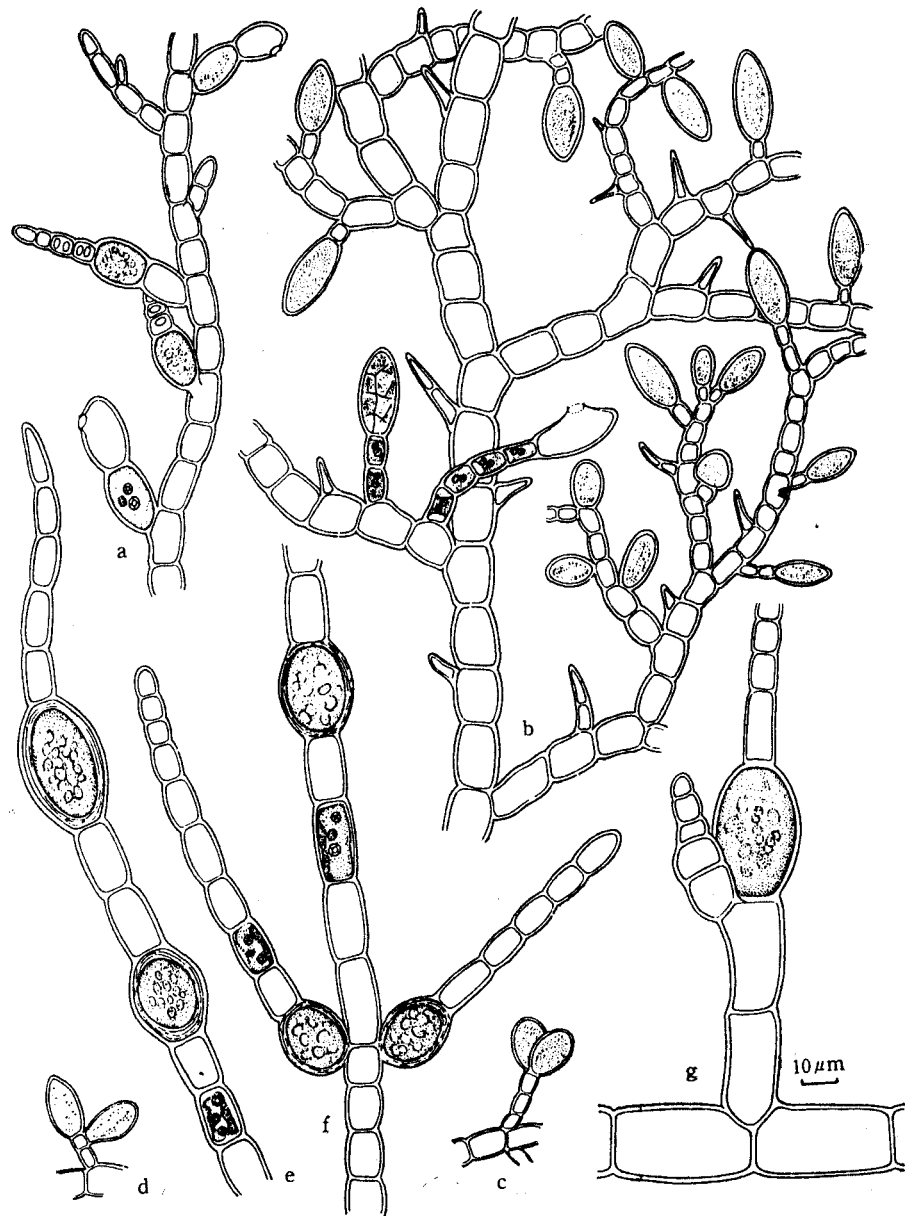


图2 嗜盐辐枝藻 *Radioramus halophilus* sp. nov.

a—d. 植物上部小枝，具动孢子囊；e—g. 植物体分枝和小枝，具厚壁休眠孢子。

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## **RADIORAMUS — A NEW GENUS OF COLEOCHAETACEAE (CHLOROPHYCEAE)**

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### ABSTRACT

*Radioramus* gen. nov. described in this paper is a new genus belonging to Coleochaetaceae a family of the filamentous green algae, and *R. halophilus* sp. nov. is a new species of this genus.

The algae has thallus of branched filaments composed of two parts quite different in morphology. In one part all the filaments are prostrate with the branches laterally opposite to form a layer of pseudoparenchyma that is one cell in thickness. The other part consists of erect filaments, each with a thicker primary branch and a thinner branch.

The cells of the thallus are uninucleate with a single laminate chloroplast that partially encircles the protoplast. Some of the cells in erect filaments are developed in thick-walled akinetes and some apical cells bear a single, long, unbranched seta whose base is ensheathed by a cylinder of gelatinous material. There may be one pyrenoid or more within the chloroplast.

The asexual reproduction of this algae is performed by means of zoospores, which are developed only in the apical cells.

The specimens were collected in a water-logged depression of alkaline soil in the southern suburb of the city of Baotou, Inner Mongolia Autonomous Region which lies to the north of a section of the Yellow River (Huanghe River) dike system in Oct. 10, 1963. The type specimens (Typus HBI, MG 14—15) are preserved in 4% formalin in the Algae Herbarium, the Institute of Hydrobiology, Chinese Academy of Science.