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New coenobial *Chlorococcales* of Cuba

Nové cenobiální zelené řasy řádu *Chlorococcales* z Kuby

Jiří Komárek

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Material of chlorococcal algae from Cuba, collected in 1964, yielded some taxa not previously recognized in the phycological literature. Three new species and one variety of the families of coenobial *Chlorococcales* (from the genera *Crucigeniella*, *Tetrachlorella*, *Didymocystis* and *Coelastrum*) are described. Data on localities and relationships to similar species are provided.

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When preparing a taxonomic review of the Cuban freshwater algal flora in 1964, I had an occasion to study the microalgal vegetation from different biotopes of Cuba. Samples from the freshwater and slightly salinic localities in the departments Havana, Matanzas and Las Villas contained interesting algal materials. Among them four taxa of coccal green algae forming coenobia were found not previously described in algological literature.

Crucigeniella ***saguei*** Komárek, sp. nova Figs. 1*a*—*d*
(*Crucigenioideae*, *Scenedesmaceae*)

Diagnosis: Coenobia quadricellularia, 5—10.2 × 5—8 μm, quondam 16-cellularia syncoenobia formantur. Cellulae ± oviformes, ad partes contiguas cum cellulas adjectas leviter complanatae, ad polos papillis singulis parvis ornatae, parallele in binis in series duas consociatae, in centro coenobii aperturam parvam rectangularem formantes. Chloroplastum unum, parietale, sine pyrenoideo. Propagatio autosporis quaternis, intra cellulam matricalem in coenobium filialem singularem constitutis; coenobia filiae productione mucilaginis e membrana matricali liberantur.

Iconotypus: Figura nostra 1b (superior).

Habitatio (locus classicus): In planctone lacus San Mateo, provincia Las Villas, Cuba.

Ethymologia: Alga ad honorem Ing. Hectore Sagué Díaz, rectoris Instituti pro silvicultura hydrobiologiaque (Santiago de Las Vegas, Cuba), dedicata.

The alga occurred commonly in the plankton of water with low salinity, among algae creating the green colour of water; water temperature 27°C, pH 8.2. — Locality: province Las Villas (lake San Mateo). — Feb. 1964.

C. saguei differs from *Crucigeniella apiculata* (Lemm.) Kom. which is the most closely related species, by its smaller dimensions, absence of pyrenoid and by the characteristic rectangular-oblong opening in the centre of coenobium.

Tetrachlorella ***nephrocellularis*** Komárek, sp. nova Figs. 2*a*—*b*
(*Crucigenioideae*, *Scenedesmaceae*)

Diagnosis: Coenobia quadricellularia, 8—10 × 5.5—8.2 μm; cellulae duae internae oblique parallele consociatae, externae duae ad polos cellularum internarum in angulo 45° adjunctae.

Cellulae nephroideae vel plus minusve elongate oviformes, ad cellulas adjectas leviter complanatae, quondam leviter arcuatae. Chloroplastum unum, parietale, sine pyrenoideo. Propagatio autosporis quaternis, in coenobium filialem singularem intra cellulam matricalem constitutis; coenobia filiae productione mucilaginis e membrana matricali liberantur.

Iconotypus: Figura nostra 2b.

Habitatio (locus classicus): In planctone piscinae nomine Laguito, Havana-Cubanacan, Cuba.

Ethymologia: alga secundum morphologiam cellularum nominata.

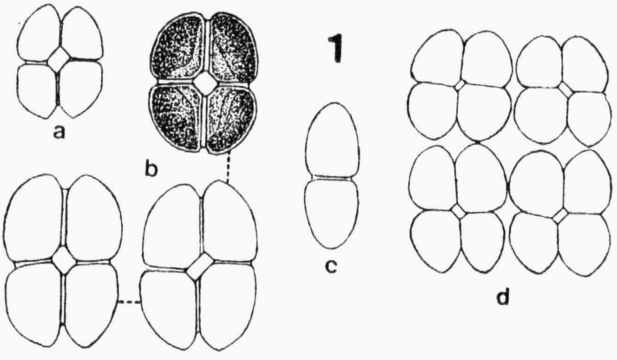

Fig. 1. — *Crucigeniella saguei* KOMÁREK, sp. nova: *a* young coenobium, *b* different solitary coenobia, *c* lateral view of the solitary coenobium, *d* young 16-celled syncoenobium.

T. nephrocellularis occurs in detritus among water plants and scarcely in plankton of small water reservoirs; water temperature 24—28°C, pH 7.2 to 7.6. — Localities: prov. Havana (Havana/Cubanacan: Laguito, Havana: small concrete pools in the botanical garden), prov. Matanzas (vicinity of Laguna del Tesoro: small channels). — Feb., Nov. 1964.

The morphology of *T. nephrocellularis* corresponds well to the generic diagnosis of the genus *Tetrachlorella* KORŠ. 1939. The most related species is Central European *Tetrachlorella uherkovichii* KOM., from which *T. nephrocellularis* differs by smaller cell dimensions, different cell shape and absence of pyrenoid.

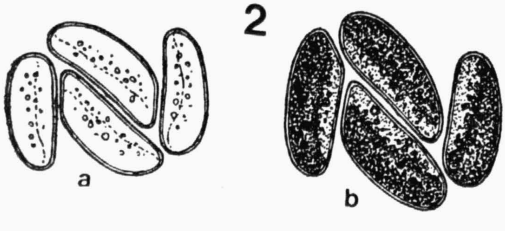

Fig. 2. — *Tetrachlorella nephrocellularis* KOMÁREK, sp. nova: *a—b* different coenobia.

Didymocystis ***fina*** KOMÁREK, sp. nova Figs. 3*a—e*
(*Scenedesmoideae, Scenedesmaceae*)

Diagnosis: Coenobia bicellularia, 4.3—8 × 3.2—7 μm, cellulis parallele consociatis. Celluale cylindricae vel elongate oblongae, ad polos rotundatae, ad cellulas adjectas complanatae. Chloroplastum unum, parietale, sine pyrenoideo. Propagatio autosporis quaternis; coenobia bina bicellularia in cellula una matricali constituentur; coenobia filiae e membrana matricali ruptura et productione mucilaginis liberantur.

Iconotypus: Figura nostra 3b (dextra superior).

Habitatio (locus classicus): In planctone cisternarum cum piscibus oppido El Dique, provincia Havana, Cuba.

Ethymologia: Alga secundum dimensiones parvas coenobiorum nominata (e lingua hispanica).

This small alga grows commonly in plankton, among detritus and in periphyton on water plants in small natural and concrete pools; water temperature 23—26°C, pH 7.0—7.6. — Localities: prov. Havana (Havana/Cubanacan: Laguito, El Dique: concrete pools), prov. Matanzas (vicinity of Laguna del Tesoro: common in small pools and channels, Zapata/Los Sabalos: among water plants in channels). — Jan., Feb., Mar., Nov. 1964.

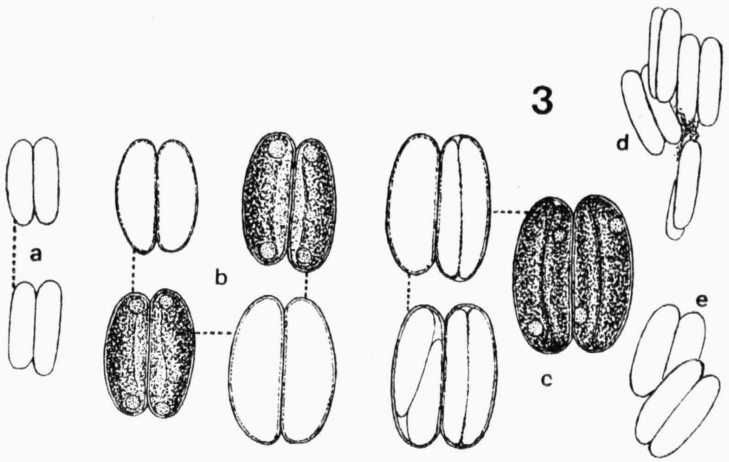

Fig. 3. — *Didymocystis fina* KOMÁREK, sp. nova: *a* free young coenobia, *b* solitary coenobia, *c* coenobia with differentiating protoplasts, *d* reproduction stage with four young coenobia, *e* two young coenobia connected with the rest of mother cell wall.

The Cuban species belongs to the genus *Didymocystis* KORŠ. in the original sense of KORŠIKOV (1953) and FOTT (1973) as well. The most closely related species are *D. bicellularis* (CHOD.) KOM. and *D. planctonica* KORŠ.; however, they contain pyrenoids and are distinguished by larger dimensions and by a somewhat different shape of cells.

Coelastrum reticulatum var. ***cubanum*** KOMÁREK, var. nova Figs. 4*a*—*f*
(*Coelastraceae*)

Diagnosis: Coenobia sphaerica, 8—16-cellularia, 13—34 μm in diametro, cellulis membrana matricali externa consociatis; membrana matricalis ad polos cellularum externarum adjecta et in (5)6 processos digitiformes ad cellulas vicinas elongata; membrana matricalis externa undulata vel squarrosa. Cellulae plus minusve rotundatae, quondam externae leviter complanatae, 4.2—7.5 μm in diametro. Chloroplastum unum, parietale, cum pyrenoideo. Propagatio coenobiis filialibus, in membrana matricali dilatata et regulariter perforata remanentibus; quondam syncoenobia creantur.

Iconotypus: Figura nostra 4a.

Habitatio (locus classicus): In planctone cisternarum cum piscibus oppido El Dique, provincia Havana, Cuba.

Ethymologia: Alga secundum locum classicum in Cuba nominata.

This variety was found commonly in the plankton and detritus (among water plants, on the bottom, on walls) of concrete and natural pools (particularly in reservoirs eutrophized by fish, crocodiles, etc.). Sometimes it takes part in the green colouring of water caused by phytoplankton. Water temperature 20—28°C, pH 7.0—7.4.— Localities: Prov. Havana (Havana/Cubana-

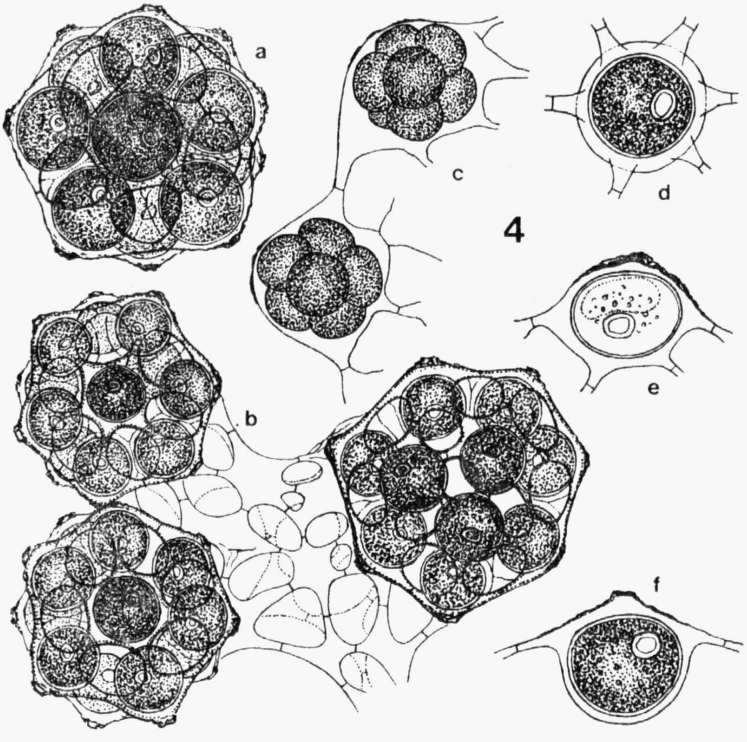

Fig. 4. — *Coelastrum reticulatum* var. *cubanum* KOMÁREK, var. nova: *a* solitary coenobium, *b* part of syncoenobium with three young coenobia, *c* daughter coenobia inside of mother cell walls, *d*—*f* details of the cells in the coenobium.

can: concrete pools in parks and gardens, San Antonio de los Baños: concrete tank, Catalina de Güines: detritus among water plants in small pools, El Dique: concrete pools), prov. Matanzas (Laguna del Tesoro: pools with crocodiles). — Jan., Feb., Oct. 1964.

Var. *cubanum* differs from the typical var. *reticulatum* by the morphology of the remnants of mother cell walls (undulated on the external surface) and by tendency to form larger coenobia and syncoenobia. From var. *polychordum* KORŠ. it is distinguished by a single processus of the cell wall remnants between the neighbouring cells in the coenobium. A similar alga was described also by PLAYFAIR (1918, p. 540, text-fig. 11) from Parramatta Park, Australia, under the name *Coelastrum reticulatum*.

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SOUHRN

Během studia sladkovodní vegetace řas Kuby v r. 1964 byly nalezeny některé druhy chlorokokálních řas, které dosud nebyly popsány. Předkládaná práce obsahuje popisy tří nových druhů a jedné variety cenobiálních zelených řas z čeledí *Scenedesmaceae* (*Crucigeniella saguei*, *Tetrachlorella nephrocellularis*, *Didymocystis fina*) a *Coelastraceae* (*Coelastrum reticulatum* var. *cubanum*). Diagnosy jsou doplněny kresbami originálního materiálu, poznámkami o příbuzných druzích a výčtem nalezišť.

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