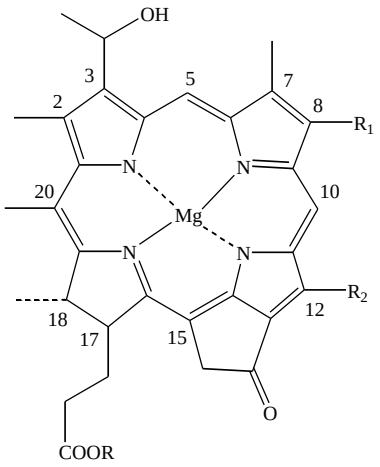
NEW BACTERIOCHLOROPHYLLS DEGRADATION PRODUCTS

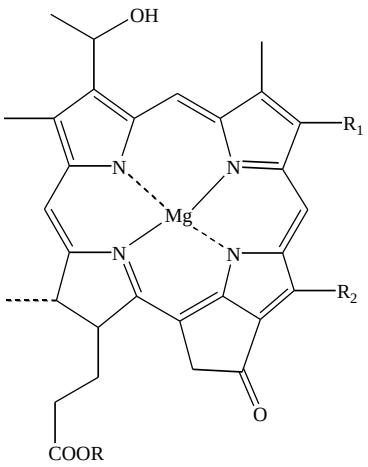
R. BALTENWECK-GUYOT[1], R.OCAMPO-TORRES[2]*

1. UMR 1131 INRA/Universtité de Strasbourg, France
2. UMR 7515 CNRS/Université de Strasbourg, France
*Corresponding author : ocampo@unistra.fr

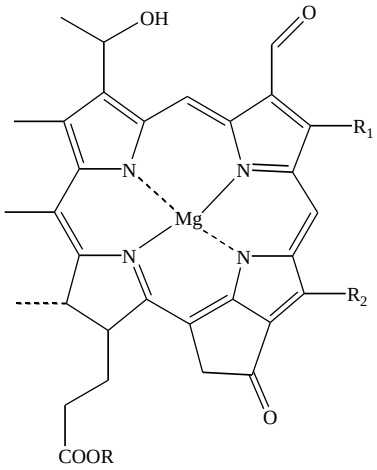
Bacteriochlorophylls *c*, *d* and *e* and were first called *Chlorobium* chlorophylls and form the complex group of photosynthetic pigments present in green, brown and red sulphur bacteria. These pigments have a specific common number of structural features and bear some specific structure differences compared to other chlorophylls and bacteriochlorophylls. Bacteriochlorophylls c, d and e are all chlorins, they lack 13^2-carbomethoxy group, they bear an α-hydroxyethyl substituent at position C-3, and of course the most important, at least for organic geochemists, they may bear extended alkyl groups at positions C-8, C-12 and for bacteriochlorophylls *c* and *e* a methyl group at position C-20. These alkyl groups are very resistant through diagenetic transformations and are still present in some porphyrins isolated from geological samples. Geological pigments bearing such as alkyl groups at positions C-8, C-12 and C-20 are biological markers of photosynthetic sulphur bacteria and are used for paleoenvironmental reconstructions as photosynthetic sulphur bacteria live in a part of the anoxic layer of stratified water bodies (ponds, lakes and estuarine habitats) located in the photic zone. Here we report the presence of several novel bacteriopheophorbides series isolated from a coastal salt pond sediment (Salt Pond, MA, U.S.A.). Two pigments series (bacteriopheophorbides and methylbacteriopheophorbides), isolated from this sediment, present the same carbon framework than bacteriopheophorbides *c* but bear an unexpected chemical group at the C-7 position. These series were studied by RP-18 HPLC, UV-Vis, SM and LC-MS (APPI mode) and the structure determination of some of their members were obtained by ^{1}H NMR. They may be degradation products of unknown photosynthetic bacteriochlorophyll series. Some of them can be intermediates on the formation of porphyrins already isolated from sedimentary organic matter.



Bacteriochlorophylls *c*
R = Farrnesyl
R_1 = Et, *n*-Propyl, *i*-Bu, neopentyl
R_2 = Me, Et



Bacteriochlorophylls *d*
R = Farrnesyl
R_1 = Et, *n*-Propyl, *i*-Bu, neopentyl
R_2 = Me, Et



Bacteriochlorophylls *e*
R = Farrnesyl
R_1 = Et, *n*-Propyl, *i*-Bu, neopentyl
R_2 = Me, Et