

## Coping with toxicity of chlorophylls: a biochemical strategy

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Chlorophylls in aquatic environments have been known to be transformed into various derivatives; a portion of chlorophylls are degraded via a so-called Type I process in which tetrapyrrole macrocycles are preserved intact with a variety of defunctionalization, hence surviving into sediments. These survived chlorophyll derivatives could be further altered chemically to be fossil porphyrins and red pigments extracted from sedimentary rock as old as the Proterozoic. We improved HPLC methods that carefully excluded analytical artifacts. We thus revealed that a major component of the chlorophyll derivatives is derived from eukaryotic microbe, which is produced along chlorophyll detoxification catabolisms.

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