Monolayers of Chlorophyll *a* and Membrane Phospholipids at a Water-Air Interface. Pressure and Potential Stability in Red Light.

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a) Chlorophyll *a* forms ideal bidimensional solutions with membrane lipids at water-air interfaces in the dark or in dim light (1-4).

b) Chlorophyll *a* in the membrane of lecithin liposomes forms small aggregates in the light (5).

Question : Does light change the interactions between chlorophyll *a* and membrane lipids ?

Technical : Measure of surface-pressure π (mN x m^{-1}) and surface-potential ΔV (mV) in a Langmuir-type trough with a mica float linked to a linear transducer and with an ^{241}Am ionizing electrode. Light source is a slide projector with a red filter (630 nm < λ_{transm} < 800 nm). Incident light on the monolayer is 14 W x m^{-2}. Subphase is phosphate buffer 0.05 M, pH = 7.8.

Compression of the monolayer to a given π and check of its stability in the dark (10 minutes) then in the light (10 minutes). Results given as light minus dark variations of π and of ΔV per minute.

Results : Chlorophyll *a* forms ideal solutions in monolayers when diluted 1 to 25 with lecithin, dipalmitoyllecithin, MGD, DGD, phytol or oleic alcohol and it forms an "expanding interaction" with chlorophyll *b* (1 to 1).

Red light has no measurable effect on chlorophyll *a* monolayers, pure or diluted, or on chlorophyll *a* : chlorophyll *b* monolayers, whether the effect is measured by $\Delta\pi$ or Δ (ΔV).

The photochemical inertia of chlorophyll *a* monolayers - pure and mixed - might be due to their more or less aggregated states.

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