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The Place of Chlorophyll a Determination In Water Analysis

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Aim of the study: Photosynthetic pigment chlorophyll a (CHLA) which basically functions in the photosynthesis is contained in green plants. And since the presence of CHLA in surface waters is an indirect indicator of excess amount of algae in the water body namely eutrophication, the concentration of it must be determined.

Material and Methods: There are three methods utilized for this determination; spectrophotometric, fluorometric and HPLC methods with decreasing quantity of detection limit. The presence of CHLA's degradation products, pheophorbides, interfere with the analysis result of CHLA in the application of the spectrophotometric and fluorometric methods while HPLC method is useful for the determination of each degradation products of CHLA.

Results: In spite of all these fixations, spectrophotometric methods is commonly used because of its simplicity, facility and economy and with further studies is improved with 0,40µg/L detection limit. The trophic state of the water body is estimated by the presence and amount of CHLA which in the case of being at high levels, points to the high concentrations of nutrients that is phosphorus and nitrogen. By using the nutrients, extraordinary grow and finally bloom and decomposition of the algae both causes bad odors with the loss of transparency of the water body and capitalizes the dissolved oxygen of the water body and depletes it by giving rise of fish kills. The WHO Guidelines restrict the recreational exposure to CHLA as 10µg/L for low acute health effects while oligotropic lakes must provide the CHLA levels below 3,5µg/L according to "Turkish Surface Water Quality Guide/30 November 2012".

Keywords: Chlorophyll A, Algae, Eutrophication