



## **Contribution of the UV-visible hair fluorescence spectrometry in Systemic Lupus Erythematosus : Diagnosis and follow-up**

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### **Abstract**

Systemic Lupus Erythematosus (SLE) is an autoimmune, multisystemic disease which may affect virtually any organ in the body. Its diagnosis is so long, hard and made according to criteria of well-established classifications. These criteria are based on clinical, radiological, biological (blood and urine samples) and anatomopathologic (skin biopsy and kidney biopsy) data. Some of these samples and biopsies are invasive and hard, and the delay in its results may delay the diagnosis. The aim of this research is to propose a new analytical technique based on UV-visible fluorescence for the diagnosis of SLE using hair as a biological marker, which is easy to collect and store. The choice of working with hair was because of the informations about the history of the evolution of the disease that it can provide. The equipment used, similar to the one used by Kongbonga and al. [1], is simple, fast and non-invasive compared to diagnostic devices for this disease. We collected 96 hair samples from a healthy group and from patients with SLE at the Habib Thameur hospital in Tunis after obtaining the agreement of the ethics committee and the agreement of the patients by signing a consent to participate. In order to remove all traces of oil, contaminants and other foreign substances, the samples have been subjected to a washing technique [2]. It involves washing the hair strands for 5 to 10 minutes with acetone and distilled water. We were able to establish a spectrometric fluorescence profile of the disease, with confirming that SLE patients have a visible molecular composition level

deficiency [3]. We could establish a cluster analysis according to its evolutionary stages and its activity scores (BILAG and SLEDAI2K). The results demonstrated a clear discrimination between healthy and sick patients and a very good correlation between the spectral measurements and the clinical data.

**Keywords :** Fluorescence Spectroscopy, Hair, Systemic Lupus Erythematosus (SLE), Diagnosis, Statistical Analysis.

**References :**

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