The Use of Albumin Isoelectric Focusing as a Prognostic Tool during the Leptospiral Infection


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Introduction: We had already shown that, in leptospirosis patients, the severity of the infection is related to an increase in non-esterified fatty acids (NEFA- mainly oleic and linoleic acids) and a decrease on plasma albumin levels, leading to high NEFA/albumin molar ratios. Plasma albumin is responsible for carrying NEFA present in the blood, thus avoiding their toxic effects. The severity of other diseases as sepsis, pre-eclampsia and pancreatitis are also related to increased NEFA/albumin molar ratios. Therefore, free fatty acid toxicity detected in such diseases seems to be related to the saturation of albumin by NEFA. This project proposes the development of an easy and low cost tool to measure the saturation of albumin by non-esterified fatty acids based on the fact that albumin bound to NEFA has a different isoelectric point (about 4.8) than NEFA depleted-albumin (pHi around 5.6)

Methods: Plasma samples of healthy and leptospirosis patients are submitted to isoelectric focusing electrophoresis in a 4.0-6.0 pH gradient. Proportions of NEFA bound and unbound albumin is, then, measured.

Results: Patients with severe leptospirosis shows increased amount of NEFA bound albumin (focused at pH 4.8) and a substantially decreased peak focusing at pH 5.6, as compared to normal subjects. Clinical and laboratorial data of patients are now being compared with these focusing data, in order to establish a relationship between disease severity and albumin focusing properties

Conclusion: Focusing data may turn a viable prognostic tool in the follow up of leptospirosis patients.