

Seminal Transferrin in the Seminal Quality Evaluation of Hemodialytic Patients

Gilmar Pereira Silva¹

Department of Urology / Andrology, University of Brasília, Brazil.

Corresponding Author: Gilmar Pereira Silva¹, Department of Urology / Andrology University of Brasília, Brazil,

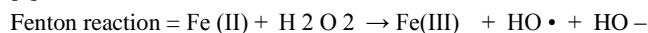
E-mail: gilpsilva2006@gmail.com

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The Transferrin is an iron ion transport protein with a biological function that is important to avoid toxic effects due to high intra and extracellular iron ion concentrations [1]. The cellular protective function attributed to transferrin, especially to the germ and support cells (Sertoli cells), is due to its possible antioxidative function exerted together with another protein linked to iron metabolism, ferritin [2]. Seminal transferrin (ST) is an isoform of plasma transferrin, abundant in seminal fluid, secretory product of Sertoli cells (80%) [3]. ST is in association with seminal ferritin, also a plasma ferritin isoform, keeps the concentration of iron ions at the optimum level in the intracellular medium (by chelation mechanism), because the concentration of iron ion in the intracellular environment is determinant in the chemical reaction direction of Fenton reaction [3], according to the equation below, (Fenton reaction) for generating of free radical, hydroxyl radical (\bullet OH) and promote different cell lesions [4].



The race in search of seminal biomarkers that reflect the seminal quality and fertility initiated in the 80's and early 90's in a non-uremic population with clinical suspicion of sub-fertility / infertility. The ST emerged as a promising protein in most of the studies of seminal biomarkers by their relationship by to keep relationship with seminal and hormonal parameters, being considered as functional index of Sertoli cells [5]. The time passed and publications of new biomarkers for male subfertility/infertility, ST was little used for this purpose and few studies were published in the following decades [6–8].

After these considerations, can make the following questions: questions remain pending? Why to re-examine the evidence .Why come back of the potential capacity of ST as biomarker of seminal quality? Why was the uremic population in hemodialysis chosen to verify and to review the potential of ST as a seminal quality biomarker? First, previously existing studies associating ST with seminal quality occurred in a population of individuals with suspected non-uremic sub-fertility / infertility [9,10]. Second, the percentage of uremic population, especially chronic hemodialytic with low seminal quality is not negligible [11]. Third: the practicality and cost-effectiveness of measuring ST in semen safely using the same plasma transferrin kit used for routine hematimetric indices, in an initial evaluation can to indicate the degree of testicular function impairment in these patients [12].

Although multiple factors (hormonal, uremic toxins, oxidative stress, cytokines) were found to be isolated or associated in the setting of the low seminal quality identified in this patient group, the isolated analysis of ST levels in the present study confirmed and maintained a significant correlation with seminal parameters evaluated in conventional spermogram (vitality, motility, morphology and sperm density), similar to those observed in previous studies in a non-uremic population with suspected subfertility / infertility [13].

This short editorial reports a brief collection of evidence in the literature dealing with the innovative use of seminal transferrin as a biomarker for the initial evaluation of seminal quality alteration in patients affected by renal dysfunctions and/or in hemodialysis. The main reason why the authors propose the seminal transferrin as a biomarker is its ease of measurement in seminal plasma and it's relatively low cost.

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