Dia-Subsisto

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Chronic kidney disease (CKD) is increasingly recognized as a public health problem. It takes the sixth place in the causes of deaths in Egypt by 4%. The incidence rates of ESRD (end-stage renal disease) are increasing over time in various areas of Egypt. The recent solutions for this problem are hemodialysis and renal transpiration. Hemodialysis is a therapy that filters waste, removes extra fluid and balances electrolytes by a man-made machine called dialyzer. It is available in most parts of the country. From its disadvantages, the cost, (Costs for dialysis are still unaffordable for most patients with ESRD) and blood contamination (The wide spread of the un efficient machines that causes death for a lot of patients). So we tried to avoid dialysis negative impacts by injecting a liquid that is contained mesoporous silica nanoparticles in the two kidneys of the human body, that is converted to a semipermeable membrane, have the ability to separate electrolyte ions and blood wastes from the blood and get rid of them through the convoluted tubule that exist out of the bowman’s capsule in the nephron of the kidney. After experimentation, the results have showed that the new treatment of the mesoporous silica injection is effective and has the ability to return the ordinary function of blood filtration of the animal body. Comparing experimental results of the animal serum creatinine and urea after and before the injection shows that the material has already filtered the blood from excess water and ions in the body.

Awards Won: