EFFECTS OF PULSED ELECTROMAGNETIC FIELD THERAPY (PEMF) ON REDUCING PROTEINURIA (P) IN CKD
Marc S. Weinberg ¹, William E. Weber ¹, David A. Weinberg ², ¹
Roger Williams Hospital, Boston University School of Medicine, Providence, RI. ² Vanderbilt University, Nashville, TN, Department of Biomedical Engineering.

Our laboratory demonstrated that the use of supramaximal doses of angiotensin receptor blockers (ARBs) reduced P independent of BP. We investigated the effectiveness of PEMF during a 2 week trial on reducing (P) in subjects with CKD, evaluating for synergy between PEMF and ARBs. PEMF has inherent anti-inflammatory and anti-fibrotic properties that modulate the calcium calmodulin-dependent nitric oxide and cGMP signaling pathways.

Four volunteers with progressive proteinuric nephropathies applied PEMF to their lower-thoracic spine, allowing electromagnetic energy to pulse over both kidneys for 30 min, 3 times a day for 2 weeks. All medications were continued without change, including previously prescribed ARB’s. Urinary spot collections were analyzed for protein to creatinine ratio’s, expressed in grams per day.

During a two week observational trial the application of PEMF demonstrated reductions in protein to creatinine ratio’s expressed on urinary spot collections. Students paired t- test demonstrated in the four subjects, p = 0.06. There were no significant changes in the glomerular filtration rate (MDRD) or mean arterial pressures. No adverse events were reported. The reduction in proteinuria over 2 weeks was arithmetically, but not statistically significant due to small population size. This reduction in proteinuria warrants further study to determine long term effectiveness and possible synergy with RAS blockade.