

Protein effects of hormone replacement therapy uncovered

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An in-depth proteomic analysis of the sera of 50 participants from the Women's Health Initiative (WHI) hormone replacement therapy trial provides some explanations for the trial's clinical results. The study, published in Biomed Central's open access journal *Genome Medicine*, shows that estrogen upregulates proteins involved in several major body processes.

Samir Hanash, M.D., Ph.D., from the Fred Hutchinson Cancer Research Center, Seattle, worked with a team of researchers to identify and quantify proteins from 2,576,869 mass spectra, the largest serum [protein](#) data set obtained from a human observational study or clinical trial to date. He said, "Remarkably, as many as 10 percent of plasma proteins analyzed were found to be affected by estrogen hormone replacement therapy in post-menopausal women. These changes indicate a substantial effect on coagulation and metabolic proteins that may explain the increased risk of venous thromboembolism and stroke, and the reduced risk of fracture, found in the WHI trial."

The authors used baseline and one-year post-treatment sera samples from 50 women in the WHI trial, separated into five experimental pools. The average age of the subjects was 61.4 years. There were no statistically significant differences in any baseline characteristics between pools. Using the samples gathered one year after the initiation of therapy, they identified changes in [serum levels](#) of proteins directly involved in processes as disparate as osteogenesis, blood vessel morphogenesis, blood pressure regulation, immunity, inflammation and

coagulation.

This work demonstrates the utility of comprehensive profiling of the serum proteome for clinical investigations. According to Hanash, "Our findings should encourage other investigators to include quantitative proteomic analysis as part of [clinical trials](#) of new therapies to better understand the effect of therapy and to identify surrogate markers of response to treatment."

More information: Application of serum proteomics to the Women's Health Initiative conjugated equine estrogens trial reveals a multitude of effects relevant to clinical findings, Hiroyuki Katayama, Sophie Paczesny, Ross Prentice, Aaron Aragaki, Vitor M Faca, Sharon J Pitteri, Qing Zhang, Hong Wang, Melissa Silva, Jacob Kennedy, Jacques Rossouw, Rebecca Jackson, Judith Hsia, Rowan Chlebowski, JoAnn E Manson and Samir M Hanash
Genome Medicine (in press), www.genomemedicine.com/

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