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Commentary

Serotransferrin and Apolipoprotein A-I in the Plasma of Patients Treated with First-Line Antiretroviral Therapy

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ABOUT THE STUDY

As plasma proteins are involved in drug metabolism, the purpose of this study was to identify and characterize drug resistance and drug resistance groups of patients with primary ART HIV1 infection with treatment duration of more than 6 years. Plasma proteomics analysis of 4 drug resistance (treatment failure) and 4 drug response (treatment responder) groups was performed. Large amounts of plasma proteins such as albumin and globulin have been depleted from plasma by the Aurum Serum Mini Kit (BioRad, USA). Plasma proteins were separated using two-dimensional gel electrophoresis on IPG strips with a pH range of 3-10. Eight protein spots were selected within the gel based on the staining densities that were separately common in the drug-resistant and drug-resistant groups. The change in the folding of each spot was calculated. Each protein spot was identified using matrix-assisted laser desorption / ionization flight time / flight time (MALDITOF / TOF) after tryptic digestion. Peptide peaks were identified by Flex Analysis version 3.3 and a search in a protein database using an internal mascot search engine. Gene ontology studies were completed with STRING v.11 and Panther 15.0.

Eight spots from 2D gels of drug susceptibility and drug resistance samples analyzed by MALDI TOF / TOF were found by Flex analysis that the two proteins had significant scores (i;e>56). These two proteins have been identified as apolipoprotein A1 and cellophyl transferase. The expression of multiple changes in these two proteins was analyzed in the drug resistance and drug response groups. It was observed that apolipoprotein A1 and serotransferrin were expressed 1.76 times and 1.13 times more in the drug-responsive group than in the drug-resistant group. Genetic analysis has revealed that these two proteins are involved in a variety of important physiological processes. Apolipoprotein AI and serotransferrin were found to be more strongly expressed in the drug-responsive group than in the drug-resistant group. Clinically significant interactions between drugs and plasma proteins have been observed. The pharmacological activity of antiretroviral (ARV) drugs depends on non-binding drugs that reach the cells that carry the human immunodeficiency virus (HIV). There was concern that changes in protein binding could affect antiviral activity and management. It is very important to study the pharmacological activity of antiretroviral drugs in HIV patients. Changes in protein binding can affect the antiviral activity of the host. The binding of plasma proteins to drugs and the effective regulation of drug metabolism help in drug discovery and the development of new drug therapies.

Patients were divided into two groups, drug resistance and drug responsiveness, based on the number of drug resistance/virus copies. The drug resistance group is defined as patients with high viral load, and NRTI and NNRTI-related mutations in the reverse transcriptase gene. Drug resistance groups are considered treatment failures. Similarly, the drug response group is defined as a patient with a low CD4 count and low virus copy. There were no NRTI or NNRTI-related mutations in the HIV1 reverse transcriptase gene.

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