

## **Proteomic analysis of human serum in type 2 diabetes mellitus patients: screening and discovering protein biomarkers of type 2 diabetes mellitus**

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Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia arising as a consequence of a relative or absolute deficiency of insulin secretion, resistance to insulin action, or both.<sup>1)</sup> An inherent difficulty in the diagnosis of diabetes is the present lack of an identified unique qualitative biological marker that separates all people with diabetes from all nondiabetic individuals. The lack of a suitable, unique marker of diabetes has led to reliance on hyperglycemia, as measured by the fasting plasma glucose (FPG) or 2-h plasma glucose (2-h PG) as the most useful diagnostic test.<sup>2)</sup> In this study, two-dimensional electrophoresis (2-DE) was used to compare the protein profiles of human serum between healthy controls (n = 30), and type 2 diabetic patients without any complications (n = 30). Because there are several proteins, such as albumin, that mask the proteins of lower abundance in serum, depletion of these high abundant proteins was preceded using Agilent Multiple Affinity Removal System. It was verified that the high abundant proteins were removed efficiently under reproducible and high affinity condition of each run. 2-DE analysis was performed to identify the proteins that had been expressed differently between two groups. It can be concluded that 2-DE may be a promising method for screening and discovering protein markers of various diseases including diabetes mellitus, so as to make the diagnosis more specific and more accurate.

### **References**

1. Kahn, S.E., The relative contributions of insulin resistance and beta-cell dysfunction to the pathophysiology of type 2 diabetes (2003), *Diabetologia*, 46, 3-19.
2. The Expert Committee on the Diagnosis and Classification of Diabetes Mellitus, Follow-up Report on the diagnosis of diabetes mellitus (2003), *Diabetes Care*, 26 (11), 3160-3167.