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ADIPONECTIN MULTIMERS AND THEIR BIOACTIVITIES WERE DOWN-REGULATED IN NEWLY DIAGNOSED CHINESE TYPE 2 DIABETES PATIENTS

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Objective Adiponectin, circulates as trimer, hexamer and high molecular weight form (HMW) in blood. Both adiponectin complexes concentration and their bioactivities are decreased in pathological state. Moreover, DsbA-L, a key regulator for adiponectin biosynthesis, is down-regulated in obese humans. However, the alterations of adiponectin multimers distribution, bioactivities and DsbA-L level in newly diagnosed Chinese type 2 diabetes (T2DM) patients are unknown. The objective of present study was to compare plasma adiponectin isoform status along with their bioactivities and DsbA-L concentration in T2DM with control subjects.

Methods Plasma total adiponectin was measured by ELISA. Adiponectin multimers were analysed by western blot followed SDS-PAGE under nonheating nonreducing conditions. Plasma adiponectin multimers were isolated by chromatography techniques from plasma in ten T2DM and ten healthy control subjects respectively. Adiponectin bioactivity was detected by incubating HUVEC with isolated adiponectin isoforms and determining the phosphorylation level of AMPK and eNOS. DsbA-L protein expression level was determined by western blot.

Results 189 T2DM (48.7±9.4 y) and 123 healthy people (42.8±8.0 y) were enrolled. In comparison with healthy control group, total adiponectin ($p<0.0001$) and HMW adiponectin ($p<0.05$) were significantly lower in T2DM patients. Furthermore, HMW adiponectin bioactivity (p-AMPK and p-eNOS level, $p<0.01$ and $p<0.01$, respectively) and DsbA-L level ($p<0.01$) were decreased in diabetes patients.

Conclusion This study directly demonstrated for the first time that human HMW adiponectin bioactivity was decreased in type 2 diabetes. We also provide a target for regulating HMW adiponectin concentration in diabetic patients.