The Effect of Metal Ions on Glucose Uptake in Muscle Cell

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Abstract

The rate of mortality of diabetes in recent years increased seven times, from 6.5 people per 100,000 people in 1978 to 44.38 people in 2003. Moreover, diabetes also lead to other types of chronic disease, e.g., blood vessel disease, heart disease, kidney disease, hypertension and so on.

In the present, the two classes of drug for treating diabetes are Sulphonylureas and Biguanides. Sulphonylureas promote the pancreas to secrete the insulin. The mechanism of Biguanides regulating the blood sugar is: inhibiting the appetite, postponing gut absorbing glucose and promoting the GLUT4 (glucose transport protein 4) translocated to the cell membrane. But OHAOral hypogycemic agent) is treated for a long time, the property of a medicine would be lost

In the previous research, the amount of chromium of the patients who have type 2 diabetes are lower than normal person. If the patients who have type 2 diabetes have supplemented approximately equivalent chromium, it would reduce the blood glucose and insulin resistance of type 2 diabetes.

If we used the heavy metals for therapy, it could cause the toxicity of metals. In order to reduce the toxicity of metals, we used the transferrin which complexes with chromium, cobalt and vanadium compounds. At the same time, we used those metal-transferrin complexes to treat the muscle and adipocyte cells, and we looked whether it could reduce the insulin resistance and blood glucose.

In the present of experiment data, we find that the cobalt-transferrin complexes have the best efficacy for increasing the uptake glucose in muscle cell and would not change the cell morphology.