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Sample Dilution in Omentin Measurement

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Adipose tissue is regarded as an endocrine organ no longer because it secretes many adipokines. Many of these adipokines are hormone-like effects. The relationships between the adipokines secreted by adipose tissue and the pathophysiological processes of inflammation, metabolic syndrome and diabetes mellitus have been extensively investigated in recent years.

Omentin which has plasma amount variation in the insulin resistance associated with conditions such as diabetes mellitus, obesity, endothelial dysfunction and atherosclerosis is a novel adipokine, synthesized in the visceral adipose tissue.

As in many adipokine, omentin measurement in routine clinical laboratories is not made. Instead, the levels are determined for research purposes. Therefore reference range interval studies have not been enough.

In the studies, specific enzyme linked immunoassay (ELISA) method is generally used to determinate the plasma omentin level (1,2). There may be matrix effect interferences the omentin measurement. According to international union of pure and applied chemistry, matrix effect is the combined effect of all components of the sample other than the analyte on the measurement of the quantity. In standard laboratory procedures to determinate the plasma omentin by ELISA method, various proportions of dilution should be applied to the samples to reduce matrix interference effect. If the dilution operation is performed for any reason, the measured value must be multiplied by the dilution factor in good laboratory practice. The dilution factor will be 5, if 5-fold dilution is applied to samples to reduce the matrix effect. If the sought parameter is measured 23 ng/mL in diluted sample, this value is multiplied by a dilution factor and 115 ng/mL should be reported which is the real value. In one of ours study, we used the BioVendor (BioVendor-Laboratomi Medicina, Brno, Czech Republic) Human Omentin-1 ELISA reagent. In standard laboratory procedure, 40-fold dilution had been applied to the samples. In this case, the results had to be multiplied by 40. In this study, the average omentin values of the patients and control group were found 606.6±313.0 ng/mL and 357.5±147.4 ng/mL respectively (3). Although study of the Omentin-1 reference range not enough, manufacturer of the reagent we used in ours study has reported the omentin-1 level approximately 480±21 ng/mL in precision analysis. It has seen that the dilution factor was taking into account in some other similar studies, when the omentin levels were analyzed (4, 5).

However, in some studies when omentin levels examined, it might be thought that dilution factor was not taken into account. For example, the study conducted by Ismail SA et al, the values of omentin were found 15.9 ng/mL, 23.9 ng/mL, 17.6 ng/mL and 8.26 ng/mL in mild, moderate, severe psoriasis patients and control group respectively (6). Compared with the values we found and similar other studies, it may suggest that in this study the dilution factor might been unaccounted for to calculate the omentin levels. Dilution factor was not taken into account in some similar studies (7,8). In these studies, omentin levels have been reported approximately 40-50 ng/mL.

Not to consider the dilution factor prevents to know the precise omentin values of the patient and control groups. Good laboratory practices should be implemented to avoid these. Operator should be examine the standard operating procedures by detailed. If dilution is necessary, the measured value must be multiplied by the dilution factor.

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