



Does Garlic Affect Serum Adiponectin and Pro-Inflammatory Adipokines Levels in Metabolic Syndrome?

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Dear Editor,

It is well known that the level of inflammation in metabolic syndrome is not high and it is often called a low-grade inflammation or metaflammation, indicating the metabolic association, or parainflammation, meaning an intermediate state between basal and inflammatory states. Whatever term is used, the inflammatory process that characterizes metabolic syndrome seems to have unique features of its own. However, most adipokines with pro-inflammatory properties including interleukin-6 (IL-6) and tumor necrosis factor- α (TNF- α) are overproduced with increasing adiposity, while some adipokines with anti-inflammatory properties such as adiponectin decrease. Some evidence suggests that monocyte-derived macrophages reside in adipose tissues and may at least in part, be the source of the pro-inflammatory adipokines generated locally and in the systemic circulation (1-3). Furthermore, toll-like receptors (TLRs)

have recently been found in the adipocytes. The two most widely studied TLRs are TLR2 and TLR4, which are activated by bacterial lipoproteins and lipopolysaccharides (LPS), respectively and these play important roles in the immune response to bacteria. It has been shown that these receptors may be activated by saturated fatty acids, which increase the TLR-mediated expression of IL-6 and TNF- α . Therefore, it seems that individuals with metabolic syndrome must have significantly higher levels of IL-6, TNF- α and lower levels of adiponectin, than those without metabolic syndrome (2, 4-6). In a recently published study by Sharifi et al, the authors investigated the effects of garlic preparations on biomarkers for inflammation, and lipid metabolism in women with and without metabolic syndrome (7). In our view the study is interesting, however it could have been more informative if they had considered some areas of the study that seem to require further clarification.

According to literature, the last paragraph of the introduction and other parts of the article and also rationality of study design that they were trying to measure "Effect of garlic on serum adiponectin and interleukin levels in women with metabolic syndrome" it seems, the authors proposed that in the metabolic syndrome, the levels of IL-6 and TNF- α must be increased and adiponectin must be reduced. With

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these presumptions, then they tried to assay the effect of garlic on these factors. Surprisingly, their data showed that baseline levels of IL-6, TNF- α and adiponectin were no different in the metabolic syndrome groups when compared to the normal women (3). Based on our experiences, we think that this may have occurred due to some technical errors especially in the ELISA assays. The scenario that increases the possibility of these technical errors is as they mentioned in the measurement section, the sensitivity of the ELISA kits (Bender Med System) for TNF- α and IL-6 were 5 pg/mL and 0.92 pg/mL respectively. Therefore, how were they able to measure data like 1.66 ± 0.28 , 2.17 ± 0.4 , 2.35 ± 0.39 and 1.89 ± 0.5 for TNF- α and 0.85 ± 0.4 , 0.61 ± 0.19 and 0.7 ± 0.2 for IL-6 as these figures are below the limitations for these two cytokine kits (7). In addition, the decrease in adiponectin levels after garlic treatment in normal subjects dropped from 56.5 ng/mL to 36.2. The reverse is written in the discussion, "A rise in adiponectin concentration in normal women after garlic administration in this study may suggest a different effect of garlic in different health conditions, suggesting a preventive role for cardiovascular disease with garlic in healthy people".

At the conclusion the question, "Does garlic really affect serum adiponectin and pro-inflammatory adipokines levels in women with metabolic syndrome," remained unanswered and still needs further investigation (8).

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