

**TITLE**

**On the anti-diabetic potentials of Lemon balm extract**

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Increased protein glycation during chronic hyperglycemia has an important role in the pathogenesis of diabetic complications due to generation of advanced glycation end products (AGE) in the body tissues. Considering the multifactorial pathways and complexity of the reactions involved in AGE formation, natural medicines are superior alternatives to synthetic drugs against such biomolecular damages. Lemon balm (*Melissa officinalis*) is a medicinal herb possessing functional compounds with unexplored anti-glycative action. The present work was conducted to evaluate the anti-glycative potentials of the herb in the bovine serum albumin (BSA)/glucose system. The level of glycation, conformational alterations, protein binding to RAGE receptors and AGE-derived protein crosslinking were assessed by means of specific fluorescence, Congo red binding assay, circular dichroism, Western blotting and measurement of protein aggregation. The obtained results revealed the inhibitory effects of balm extract in the late stage of glycation process and AGE formation. The efficacy of lemon balm in preserving the structural integrity and alterations in the secondary structure of glycated-protein was associated with the extract constituents. Moreover, the herb extract afforded a protective effect against AGE-induced toxicity via impeding the affinity of glycated-albumin to the RAGE receptors of microglial cells. Our results represent the anti-glycative properties of lemon balm and its considerable potential against glucose-induced cellular damage, remarkable prospect for treatment of complications such as diabetes, ageing and a broad range of AGE-associated conformational disorders.

**Biography**

Mehran Miroliaei has completed his Ph.D at the age of 31 years from Tehran University and Academic visitor in Strathclyde University (UK). He has published more than 20 papers in reputed journals and serving as reviewer for Diabetes & its Complication and Enzyme & Microbial Technology.