levels of Ins1 gene expression in diabetic animals. Our data obtained from this study indicated that subacute administration of mianserin has a remarkable anti-hyperglycemic effect on STZ-induced long-term hyperglycemia. Further, this drug has a notable beneficial effect on chronic hyperglycemia-induced polydipsia, polyuria, polyphagia and weight loss. The observed anti-hyperglycemic effect of mianserin in this study seems to be mediated by an increase in insulin synthesis. Nevertheless, additional studies, such as examining the alterations in expressions of other related genes or measuring the levels of synthesized insulin by Western-blot method, are needed to verify this idea.
Conclusion: To the best of our knowledge, this is the first study to show that the anti-hyperglycemic effect of mianserin, an atypical antidepressant, in the experimental diabetes model was comparable to those of the reference drugs metformin. Considering that mianserin simultaneously exhibits antidepressant and anti-hyperglycemic effects, it seems that this drug could have an additional advantage for diabetic patients for treating the mood disorders caused by diabetes.
Keywords: anti-hyperglycemic, Ins1 mRNA expression, mianserin

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[Abstract:0681] ***Biological psychiatry and neuroscience***

Antidepressant-like effects of quercetin in mice: evidence for the involvement of monoaminergic mechanisms

Feyza Alyu, Umide Demir Ozkay, Yusuf Ozturk

Department of Pharmacology, Anadolu University, Faculty of Pharmacy, Eskisehir-Turkey
e-mail address: feyzaalyu@anadolu.edu.tr

Objective: Recent evidence suggests that quercetin, which has the structure 3,3′,4′,5,7-pentahydroxyflavone, exhibits several central nervous system (CNS)-related activities like antinociception and cognitive enhancementas well as antidepressant-like and anxiolytic-like effects etc. In this study, we aimed to investigate the possible mechanism underlying the antidepressant-like effect of quercetin.
Methods: Adult BALB/c female mice, weighing 30–35 g, were used for the experiments. The animals were housed in a room with a controlled temperature (25±1°C) and photoperiod (12-h light/dark cycle, with lights being switched on at 08.00 AM). Temperature, sound levels, and light conditions were not altered during the course of the experiments. The antidepressant-like activity of quercetin (100 mg/kg, intraperitoneally) was evaluated by modified forced swimming and tail suspension tests, which are widely used behavioral despair models for anti-depressant drug screening studies. Additionally, the spontaneous locomotor activities of the mice were assessed using the activity cage apparatus. To determine the mechanisms underlying the antidepressant-like effect of quercetin, mice were treated with different pharmacological agents. A possible participation of the serotonergic system in the pharmacological effect of quercetin was investigated using p-chlorophenylalanine methyl ester (inhibitor of serotonin synthesis, PCPA), and the probable contribution of the catecholaminergic system was examined using α-methyl-para-tyrosine methyl ester (inhibitor of catecholamine synthesis, AMPT). Statistical analyses were performed using GraphPad Prism 6.01 software (GraphPad Software, San Diego, CA, USA). Comparisons between the experimental groups were performed either by one-way ANOVA followed by Tukey's test or two-way ANOVA followed by the Bonferroni post hoc test. The experimental protocol was approved by the Local Ethical Committee on Animal Experimentation of Anadolu University, Eskisehir, Turkey.
Results: In both modified forced swimming and tail suspension tests, immobility time of the mice was significantly reduced by quercetin administrations (100 mg/kg i.p.), indicating the antidepressant-like activity of this phenolic compound. In the activity cage tests, quercetin administration did not change the total number of horizontal or vertical activities indicating that the observed antidepressant-like effect was not affected by probable changes in the locomotor activity.
Data obtained from the mechanistic studies showed that the anti-immobility effect of quercetin in the tail suspension test was reversed with both AMPT and PCPA administrations. This finding provides an evidence that the anti-depressant-like effect of the compound is related with an increase in the serotonin and catecholamine levels in the CNS.
Conclusion: To the best of our knowledge, this is the first study to show the underlying mechanisms of the anti-depressant-like effect of quercetin. Although our results are preliminary, further studies with specific receptor antagonists are expected to clarify possible involvement of other receptors in the antidepressant-like effect of quercetin.
Keywords: modified forced swimming test, quercetin, tail suspension

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