Pharmacological Reports
2013, 65, 1580–1590
ISSN 1734-1140

Review

Gender differences in genetic mouse models evaluated for depressive-like and antidepressant behavior

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Abstract:
Depression is a mental disease that affects complex cognitive and emotional functions. It is believed that depression is twice as prevalent in women as in men. This phenomenon may influence the response to various antidepressant therapies, and these differences are still underestimated in clinical treatment. Nevertheless, most of the current findings are based on studies on male animal models, and relatively few of these studies take possible gender differences into consideration. Advancements in genetic engineering over the last two decades have introduced many transgenic lines that have been screened to study the pathomechanisms of depression. In this mini-review, we provide a compendious list of genetically altered mice that underwent tests for depressive-like or antidepressant behavior and determine if and how the gender factor was analyzed in their evaluation. Furthermore, we compile the gender differences in response to antidepressant treatment. On the basis of these analyses, we conclude that in many cases, gender variability is neglected or not taken into consideration in the presented results. We note the necessity of discussing this issue in the phenotypic characterization of transgenic mice, which seems to be particularly important while modeling mental diseases.

Key words:
depression, antidepressants, mice, genetic models, knockout, tail suspension test, forced swim test, gender