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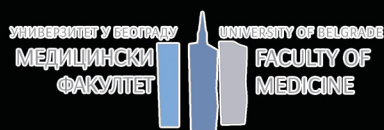


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## The role of gut microbiota in depressive behavior and the effects of antidepressants

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There is accumulating evidence demonstrating effects of gastrointestinal microbiota on brain function and behavior, including depressive behavior. We have demonstrated that antidepressants, the main drugs used for alleviating depression, affect gut microbiota composition as well, and in this way partly contribute to improvement of depressive symptoms. Specifically, our results showed that several types of antidepressants reduced abundance of bacterial genera *Ruminococcus*, while supplementation with *R. flavefaciens* diminished antidepressant-induced decrease of depressive behavior. Treatment with *R. flavefaciens* affected cortical gene networks, up-regulating genes involved in mitochondrial oxidative phosphorylation, while down-regulating genes involved in neuronal plasticity, suggesting a mechanism for microbial regulation of antidepressant treatment efficiency. In further studies, we are aiming to delineate the role of gut microbiota in conveying the long-term effects of adolescent stress on development of anxiety and depressive behavior.