

Gut microbiota and metabolites in estrus cycle and their changes in a menopausal transition rat model with typical neuroendocrine aging

Ruoxi Dai^{1†}, Jianqin Huang^{1,2,3†}, Liyuan Cui¹, Ruiqi Sun⁴, Xuemin Qiu¹, Yan Wang¹, Yan Sun^{1,2,3*}

¹Hospital & Institute of Obstetrics and Gynecology, Fudan University, Shanghai, China

²The Academy of Integrative Medicine, Fudan University, Shanghai, China

³Shanghai Key Laboratory of Female Reproductive Endocrine-related Disease, Hospital of Obstetrics and Gynecology, Fudan University, Shanghai, China

⁴Department of Clinical Medicine, Clinical College of Anhui Medical University, Hefei, China

Methods:

SAMPLE COLLECTION:

Young (Y; 2-3-month-old) and middle-aged (MA; 9-10-month-old, retired breeders) female rats (Sprague Dawley, Charles River, Beijing) were fed with radiation-sterilized lab rodent feed (number 1010086; Jiangsu Xietong Pharmaceutical Bio-engineering Co., Ltd.) and water ad libitum. A 12-hour light/12-hour dark cycle (lights on at 8 a.m.) and the room temperature at 23°C was held. Estrous periodicity was detected by vaginal smear for at least consecutive two cycles (ten days). Only rats in possession of two regular estrous periods (four to five days) were included for the subsequent assays. On the basis of age and estrous stage, the rats were assigned to one of the following subgroups respectively: young, proestrus and diestrus (Y-P and Y-D); middle-aged, proestrus and diestrus (MA-P and MA-D). All fecal specimens were harvested and quickly chilled in liquid nitrogen and finally transferred to -80°C refrigerator for subsequent experiments.