

研究报告

# 单胺氧化酶B单核苷酸基因多态性与犬旷场行为关联分析

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## 摘要

采用旷场行为测试方法, 测定204条德国牧羊犬、拉布拉多犬、史宾格犬二月龄幼犬在新异环境下的兴奋性和探索活动, 同时应用RFLP-PCR方法检测单胺氧化酶B(Monoamine Oxidase B, MAOB)基因的多态性, 分析MAOB基因的基因型和基因频率在品种间的分布差异以及基因多态性与旷场测验中行为参数的相互关系, 发现MAOB基因型频率与基因频率在犬品种之间差异极显著( $P<0.01$ ), MAOB基因型与幼犬在旷场中的走动时间、趴卧时间、跨格次数、站立扒墙次数有关( $P<0.01$ 或 $P<0.05$ ), 对运动姿势改变次数也有一定影响( $P=0.064$ )。其中, TT基因型犬的走动时间和跨格次数均高于TC型和CC型犬( $P<0.05$ ), 运动姿势改变次数和站立扒墙次数高于CC型犬( $P<0.05$ ); 而CC型个体的趴卧时间高于TT型个体( $P<0.05$ )。MAOB基因对走动时间和跨格次数的加性遗传效应达极显著( $P<0.01$ ), 对运动姿势改变次数、站立扒墙次数和趴卧时间有显著的加性效应( $P<0.05$ )。实验结果表明, MAOB基因与幼犬在旷场测验中的运动、兴奋性和探索活动有关, TT基因型对运动、兴奋性和探索活动具有正遗传效应。

关键词 犬 单胺氧化酶B基因 单核苷酸多态性 旷场测验 行为

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## Association Between the Canine Monoamine Oxidase B (MAOB) Gene Polymorphisms and Behavior of Puppies in Open-Field Test

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### Abstract

<P>Excitability, activity and exploration behavior of puppies in a novel open-field were tested in a total of 204 two-month-old German shepherd dog, labrador retriever or english springer spaniel puppies. The polymorphisms of monoamine oxidase B gene (<EM>MAOB</EM>) were detected by PCR-RFLP. Statistics analysis indicated that genotype and allele frequencies of the polymorphisms were significantly different among three breeds (<EM>P</EM><0.01). With GLM analysis of SAS software, association analysis was conducted between <EM>MAOB</EM> gene polymorphisms and locomotion and vocalization behavior parameters in the open-field test. The results showed that <EM>MAOB</EM> gene polymorphisms had a significant effect on walking time, squares crossed, lying time, the times of standing up against walls (<EM>P</EM><0.01 or <EM>P</EM><0.05) and were associated with the times of posture change (<EM>P</EM>=0.064). Walking time and squares crossed were higher in <EM>TT</EM> genotype puppies than those in <EM>TC</EM> and <EM>CC</EM> puppies (<EM>P</EM><0.05) and the times of posture change and standing up against walls were also higher than those in <EM>CC</EM> (<EM>P</EM><0.05). In addition, lying time in <EM>CC</EM> genotype puppies were higher than that in <EM>TT</EM> (<EM>P</EM><0.05). <EM>MAOB</EM> had a positive effect on walking time, lying time, squares crossed, the times of posture change, the times of standing up against walls in the three dog breeds that was highly statistically significant (<EM>P</EM><0.01 or <EM>P</EM><0.05). Our results imply that <EM>MAOB</EM> gene significantly affects the excitability, activity and exploration behavior of puppies in open-field

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test and TT genotype has favorable effects in these behavior traits <BR></P>

**Key words** [dog](#) [monoamine oxidase B gene](#) [SNP](#) [open-field test](#) [behavior](#)

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