

研究报告

# 鸡催乳素基因序列多态及生物信息学分析 Polymorphisms and Bioinformatics Analysis of Chicken Prolactin Gene

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## 摘要

选择繁殖性能具有明显差异的4个鸡品种(莱航鸡、阳山鸡、丝羽乌骨鸡和隐性白洛克鸡)构建品种DNA池,采用测序的方法快速筛查鸡催乳素基因(chicken prolactin, cPRL)5'侧翼调控区、外显子区和部分内含子区约4500 bp范围内可能与产蛋性能相关的序列多态,共检测到13个SNPs和两个短片段(24 bp和15 bp)插入/缺失多态,其中在5'侧翼序列筛查到9个SNPs及两个短片段插入/缺失多态,在第2外显子筛查到1个SNP,在第5外显子筛查到两个SNPs,在第2内含子筛查到1个SNP;进一步利用生物信息学分析cPRL基因的5'侧翼调控序列,发现24 bp短片段的插入使莱航鸡比阳山鸡多出了1个Evi-1可能的结合位点(93分),C-2402T的变异则使阳山鸡比莱航鸡多出了1个C/EBPbeta可能的结合位点(94分),这两个结合位点是否影响cPRL基因的表达,影响鸡的就巢性和产蛋性能,还需要进一步研究。Abstract: Four chicken breeds (White Leghorn, Yangshan, Taihe Silkies, White Recessive Rocks) with different reproduction were applied to screen potential SNPs related to laying performance in the 5' flanking region, exon region and partial intron region of chicken prolactin (cPRL) gene. Totally almost 4500 bp were screened rapidly based on DNA pooling and sequencing, and thirteen single nucleotide polymorphisms (SNPs) and two indels (24 bp and 15 bp) were found, including nine SNPs and two indels in the 5' flanking region, one SNP in Exon 2, two SNPs in Exon 5 and one SNP in Intron 2 respectively. Furthermore, 5' flanking region of cPRL gene was analyzed by the website of <http://motif.genome.ad.jp/>. A possible Evi-1 binding site (score 93) was found in White Leghorn cPRL gene because of the 24 bp insertion, another possible C/EBPbeta binding site (score 94) was found in Yangshan cPRL gene because of the variation of C-2402T. Further studies need to be carried out to verify their effects on the expression of cPRL gene, the broodiness and laying performance of chickens.

关键词 [鸡催乳素\(cPRL\)基因](#) [单核苷酸多态性\(SNPs\)](#) [片段插入/缺失多态](#) [生物信息学](#) Key words [chicken prolactin \(cPRL\) gene](#) [single nucleotide polymorphisms \(SNPs\)](#) [indels](#) [bioinformatics](#)

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## Abstract

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