

Abstract

Sex allocation theory represents one of the key subjects of evolutionary ecology. There are several studies which bring strong evidence for relationship of environment and sex ratio in fish, reptiles, amphibians and some invertebrates. However, we still wait for answering of this question in mammals and birds. One of obstacles is the fact that in this case sex is determined by sex chromosomes. Many authors consider the chromosome segregation distortion (meiotic drive) as the most probable cause of sex ratio manipulation. But according to the traditional Mendelian conception, chromosome segregation should be a random process. Because of new methods invented in 90's we can determine sex of an individual by molecular techniques and so find out the primary sex ratio. That's why an intensive research has occurred at the turn of the century. However, there are many experimental studies we still miss reliable evidence of proximate mechanism and ultimate cause of sex ratio manipulation in birds. According to results of several studies, the sex ratio distortion occurs at primary level but nobody really tested the existence of meiotic drive directly. So we decided to test a possible cause of meiotic drive – centromere methylation. The latest research shows that methylation influences several characteristics of centromere which is so important for kinetochore-microtubule connection within the cell meiotic division. We tested this hypothesis on a model passerine bird. However, our results show that sex ratio doesn't differ between the experimental and control group. So this experiment hasn't supported the hypothesis of meiotic drive. In the second part of this study we tested the effect of folic acid consumption on egg weight. This vitamin is well known because of its positive impact on embryo development. Females which have sufficient amount of folic acid could invest more to reproduction and so lay heavier eggs. However, also in this case we didn't find any correlation.