

JOINT EVENT

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Peroxiredoxin I as a candidate biomarker of male fertility**Do Yeal Ryu, Saehan Kang, Won Ki Pang, Won Hee Song, Md. Saidur Rahman and Myung Geol Pang**
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Conventional semen analysis has limitations to predict male fertility in livestock industry. Although several studies have been performed to overcome the limitation, the current solution to prediction is still unsatisfactory. It is generally accepted that peroxiredoxin I (PRDX I) have a critical role in the regulation of male fertility. Therefore, the current study was designed to investigate the correlation between PRDX I and male fertility. PRDX I was examined on spermatozoa collected from 14 individual boars with different litter size (10.3-14.2). 530 sows were artificially inseminated to determine the litter size. Subsequently, several sperm function were evaluated. Our study showed that there is a significant positive correlation between litter size and PRDX I ($r=0.686$ and $p = 0.007$) as well as hyperactivity ($r=0.5769$ and $p=0.031$). Subsequently, the prediction accuracy of boar fertility was determined by the receiver operating characteristic (ROC) curves. The ROC analysis showed that PRDX I can predict litter size with overall accuracy 92.86% (sensitivity 90%, specificity 100%, negative predictive value 80%, and positive predictive value 100%). In addition, hyperactivity also showed 80% overall accuracy to predict litter size (sensitivity 70%, specificity 75%, negative predictive value 50%, and positive predictive value 87.5%). As a biomarker, PRDX I and hyperactivity are expected to increase pups than average litter size (0.54 and 0.45, respectively). As far we know no other authors have found the correlation between PRDX I and litter size. Consequently, PRDX I might be the novel candidate biomarker for diagnosing male fertility and litter size in livestock industry.

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