

Application of flow cytometry to evaluate semen quality traits of auctioned boars ⁽¹⁾

Lin-Liang Peng ⁽²⁾ Hsiu-Lien Lin ⁽²⁾ Yung-Yu Lai ⁽²⁾ Der-Yuh Lin ⁽²⁾ Jenn-Rong Yang ⁽²⁾
Shun-Kuei Hsu ⁽³⁾ Kuei-Juh Liu ⁽³⁾ and Ting-Yung Kou ⁽²⁾⁽⁴⁾

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Abstract

Semen quality directly affects in the breeding traits such as sow's conception rate or litter size. Boar's semen quality can detect and predict the fertility level of boars and is a key measure in maintaining productive efficiency and avoiding economic losses. This study used flow cytometry to evaluate the semen of Duroc and Landrace boars participating in the Formosan Farmers Association for Swine Improvement auction. The effect of breeds, days of age of semen collection and season on semen traits were analyzed for application and selection of breeding pigs with excellent sperm production ability. The results showed that the Landrace boars had higher semen volume but the semen concentration, compared with that of Landrace boars, was lower ($P < 0.05$). Regarding the influence of days of age at semen collection, traits such as the semen volume, total sperm counts, sperm viability, and acrosome and sperm membrane integrity of Duroc boars at aged over 300 days were significantly higher than those at age 240 - 269 days and 270 - 299 days ($P < 0.05$), indicating that Duroc boars over 300 days old have better semen traits, compared with those boars at younger age. While the effect of days of age on Landrace boars requires more data for further analysis. In terms of seasonal effects, the results showed that the chromatin structural integrity is lower in autumn for semen collected from the semen traits of Duroc and Landrace boars. In sum, the research results can be used for future evaluation of breeding and selection in breeding pigs.

Key words: Semen quality traits, Flow cytometry, Auctioned boars, Boars age, Semen collection season.

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(2) Genetics and Physiology Division, MOA-TLRI, HsinHua Tainan 71246, Taiwan, R. O. C.

(3) Formosan Farmers Association for Swine Improvement.

(4) Corresponding author, E-mail: tykuo@mail.tlri.gov.tw.