translocation and the boar carrying the rep(10;13) were 6.5, 6.0, and 6.0, respectively, >40% less than the herd average (11.4). Moreover, breeding records from the 2 rcp(1;6) boars revealed an incidence of repeat breeding and percentage stillborn piglets of 28%, 38% and 0.3%, 0.6%, respectively. In brief, these two reciprocal translocations, which have not been previously reported, were responsible for a substantial decrease in prolificacy of the carrier animals and may be widely propagated through their offspring. Further analysis is needed to determine the origin of the translocation (acquired or *de novo*) and the reciprocal nature of the translocation should be confirmed by more accurate techniques such as FISH (fluorescence *in situ* hybridization).

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Effects of dietary vitamin supplementation and semen collection frequency on hormonal profile during ejaculation in the boar

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To better assess the interactions between husbandry factors and endocrinology of the boar during ejaculation, 40 boars were randomly allocated to two dietary treatments: basal diet corresponding to the industry average (C), and basal diet supplemented with extra vitamins (V); 5× higher than C for vitamin D; 3× for vitamins A, E, and K; and 10× for vitamins B_1, B_2, B_3, B_5, B_6, B_9, and B_{12}. Within each dietary treatment, boars were submitted to two regimens of semen collection over 3 months preceding hormonal evaluation: three times per 2 weeks (3/2) or three times per 1 week (3/1). At the end of the semen collection regimen, boars were cannulated for repeated blood samplings before and during ejaculation. Luteinizing hormone (LH), follicule stimulating hormone (FSH), 17(-estradiol (E_2) and testosterone (T) were measured in blood plasma and seminal fluid. Two types of hormonal response are presented. The first one, before ejaculation (rest period) corresponds to the mean of the four samples taken at 15 min intervals, compared to the samples at the onset of the ejaculation (Quarter 1). The second one corresponds to the hormonal variations during ejaculation, divided in four quarters of equal time. At the onset of ejaculation, plasma E_2 was higher than during the rest period ($P < 0.01$). This increase tended to be more pronounced for V than C boars ($P < 0.1$) and tended also to be more pronounced in 3/1 than 3/2 boars ($P < 0.06$). Plasma T increased from rest period to the onset of the ejaculation for V boars, whereas it decreased for C boars (diet × period, $P < 0.05$). Plasma FSH tended to increase from the rest period to the onset of ejaculation in 3/2 boars, whereas it tended to decrease in 3/1 boars (collection frequency × period, $P < 0.06$). During ejaculation, vitamin supplement and collection frequency did not influence the concentration and total amount of hormones in seminal fluid ($P > 0.24$). Plasma LH increased linearly over the duration of ejaculation ($P < 0.01$). Plasma T decreased between Quarter 1 and Quarter 2 of ejaculation, and increased thereafter ($P < 0.01$). Although plasma E_2 was not influenced by treatments ($P > 0.31$), there was a correlation between plasma E_2 and T concentrations ($r = 0.62$, $P < 0.01$). At the onset of ejaculation (Quarter 1), plasma FSH was higher in 3/2 than 3/1 boars ($P < 0.05$), but this effect tended to diminish ($P < 0.08$) during ejaculation. Plasma FSH during the rest period and ejaculation was negatively correlated with the sperm production ($r = -0.60$, $P < 0.01$) and with testicular weight ($r = -0.50$, $P < 0.01$). Testicular weight was positively correlated with testicular volume ($r = 0.87$, $P < 0.01$) and with the sperm production ($r = 0.63$, $p < 0.01$). In conclusion, it appears that husbandry factors such as a supplement of dietary vitamins and semen collection regimen in breeding boars can influence hormonal secretion and/or release during ejaculation. The correlation between FSH and testicular size or sperm production merits further investigation.

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Effects of dietary vitamin supplementation and semen collection frequency on reproductive performance and semen quality in boars

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The objective of the present study was to determine the effects of increasing the daily provision of dietary fat- and water-soluble vitamins on vitamin metabolic status and semen characteristics of boars under controlled and commercial conditions, and to evaluate the efficiency of this vitamin supplement to cope with

intensive collection frequency. In a first experiment, 40 boars were allocated to two dietary treatments: basal diet corresponding to the industry average (C) and basal diet supplemented with extra vitamins (V); 5× higher than C for vitamin D, 3× for vitamins A, E and K and 10× for vitamins B_1, B_2, B_3, B_5, B_6, B_9 and B_{12}. Within each dietary treatment, boars were submitted to two regimens of semen collection frequencies: three times per 2 week (3/2) and three times per 1 week (3/1) during a 3 month period. Afterwards, all boars were intensively collected (daily) for 2 week. A resting period of 1 month followed, and all boars were collected three times per 2 week. Thereafter, the regimen collections treatments were reversed and the same procedure was followed up to the end of the intensive collection period. A second experiment was done in commercial conditions at CIPQ Inc. QC; 200 boars (young, 8–10 months and mature, >15 months) were randomly allocated to the two dietary treatments described above (C and V). All boars were collected two times per week during a 6-month period. Classical measurements on sperm and ejaculate quality and quantity were done, and blood samples were collected throughout both experiments to measure vitamin concentrations. In the first experiment, vitamin concentrations in blood and seminal plasma increased in boars supplemented with vitamin ($P < 0.05$). However, vitamin concentrations were not affected by collection frequency ($P > 0.14$). Dietary vitamin supplement did not affect sperm production or sperm quality ($P > 0.28$), but semen volume increased during the 3 mo periods for V boars ($P < 0.05$). The 3/1 boars produced fewer doses per ejaculate than 3/2 boars ($P < 0.0001$), but the cumulative sperm production for the 3 months period was increased by 20% in 3/1 boars as compared to 3/2 boars. For the second experiment, vitamin supplement did not increase sperm production of boars ($P > 0.61$). Mature boars produced more semen doses and a greater volume than young boars ($P < 0.05$). After 5 months of experimentation, young boars produced as much semen as mature boars ($P > 0.46$). Semen quality (motility score) was slightly better in young boars receiving vitamin supplements, whereas the effect was opposite in mature boars (age × vitamin, $P < 0.05$). In conclusion, dietary supplements of fat- and water-soluble vitamins increased the amount of vitamins available for the animal and the collection frequencies had no effect on vitamin status. Moreover, in spite of an effect on the ejaculate volume, the dietary supplement of vitamin had no effect on sperm production or quality.

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The effect of selenium supplement in diets of young boars on semen quality, antioxidant enzymatic activity and lipid peroxidation

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The objective was to study the effect of selenium levels in the diet of young boars on semen quality, superoxide dismutase (SOD), glutathione peroxidase (GPx) and lipid peroxidation (MDA). *Design*: Twenty-one young pigs (6 months of age, 95 kg live weight) were housed in individual pens and fed *ad libitum* a diet based on sorghum–soybean meal (13% CP, 3345 Mcal ME) containing three levels of selenium: T1 = 0.025 ppm, T2 = 0.3 ppm, and T3 = 0.5 ppm (Sel-Plex 2000, Alltech Inc.). When pigs reached 130 kg live weight, they were trained for semen collection using a dummy and the gloved-hand technique, then semen was collected twice weekly for 13 weeks. Semen assessment was carried out immediately after collection and included: volume, motility, viability, abnormalities, and concentration. An aliquot from each ejaculate was centrifuged; cells and seminal plasma were separated and transported to the laboratory to determine SOD and GPx activity, and MDA concentration. Six males (two per group) were castrated to assess the microscopic characteristics of seminal tubules epithelia. *Results*: There were significant differences between T1 vs. T2 and T3 regarding all assessed semen quality variables. With respect to lipid peroxidation, there was no significant difference among treatments: T1 = 1.66, T2 = 2.75, T3 = 2.30 mmol/L MDA (preliminary results). At the moment, we are still working on SOD and GPx activity assessment, as well as on the histology of seminiferous tubules. *Discussion*: Selenium-deficient diet negatively affected semen quality; this effect may be present throughout the adult life of boars affecting their fertility. Selenium supplement apparently does not interfere with lipid peroxidation. *Conclusion*: A complete spectrum of results is needed to evaluate the effect of selenium supplementation on pig sperm quality.

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