Assessment and Modification of Behaviour of the Stallion

D. Burger
Swiss National Stud, Unité ALP-Haras, 1580 Avenches, Switzerland
Email: dominique.burger@haras.admin.ch

Disorders and problems associated with stallion behaviour are not rarely observed. They can be categorized in breeding behaviour problems and issues of performance stallions. Assessment, interpretation and modification of such problems require a profound knowledge of physiology and behaviour of stallions under domestic housing and management conditions as well as under free-running conditions. Thus there exist quite remarkable differences.

**Breeding stallions**

In a lot of cases behavioural problems of breeding stallions are “man-made” and originate from wrong manipulations and unnatural management. Good handling of breeding stallions involves correct work with the stallion in nonsexual situations to establish mutual respect and working commands, but very respectful direction of the sexually aroused stallion, precopulatory behaviour to be allowed and supported, use of positive reinforcement, respecting the strong individuality of males, and providing of ample room. Common serious errors are not allowing the stallion to touch the mare during teasing, over-corrections, punishing mounting without erection, rushing the stallion to dismount after ejaculation or aversive conditioning of periodic spontaneous erection and penile movements known as masturbation (McDonnell, 2000). Beside handling experiences, season and reproductive hormones, stimulus mares, socio-sexual environment, housing, genetics, diet and exercise conditions are considered as factors affecting stallion behaviour.

The most useful parameters to assess behaviour of breeding stallions include erection latency, number of mounts, number of thrusts and palpable ejaculatory pulses. Most often encountered problems are inadequate sexual interest and ejaculation dysfunction. Erection failure is rarely seen in stallions. After exclusion of potential neurologic and musculoskeletal pathologies, behavioural problems can be approached on case to case evaluation by management adaptation (exposure to mare(s), etc.), correct handling and re-training and/or anxiolytic medication (diazepam). Other medications described in literature can be tried, but proved not to be consistently successful under practical conditions.

**Performance stallions**

The combination of performance and reproduction demands a good management of the stallion holder. In this regard it is strongly recommended to strictly separate sporting and reproductive duties. Artificial insemination programs offer nowadays good options.

Inhibition of undesirable sexual behaviour by suppressing reproductive endocrine function in stallions is probably the most frequent question in the daily practice of veterinarians. Nowadays immunization against GnRH offers a viable and reversible alternative to surgical or hormonal castration by circumventing surgical risk, frequent drug administration and residue problems. In 1998, an anti-GnRH vaccine (Improvac®, Pfizer Animal Health, Australia) has become commercially available to control boar taint in pigs. In 2001,
Equity™, produced from the same company and with a modified formulation, was licensed for specific use in mares in Australia and New Zealand.

In the only controlled study on Equity™ in stallions (Janett et al., 2009) so far, 5/8 stallions were immunized 3 times at an interval of 4 and 8 weeks, respectively, and a follow-up during 52 weeks took place. Total sperm number, percentage of normal sperm and motility of all treated stallions continuously decreased after the second vaccination. However, semen production was never entirely suppressed. All the above parameters tended towards prevaccination levels 10-12 months after initiation of the study. Decrease in libido was significant but varied individually occurring 13-18 weeks after the first vaccination. At the end of the experiment, 4/5 stallions regained their original libido. Preliminary results of a current field study in Europe using 40 non-breeding stallions with libido problems demonstrate, that 33 (82.5%) responded with a decrease in libido, the duration of which varied greatly among single individuals (Burger et al., 2006; Burger, unpublished data).

To detect long time effects of GnRH immunization and resumption of reproductive activity, testosterone in the stallion has been found to be a good indicator, whereas GnRH antibody titres are not reliable (Janett et al., 2009): Plasma testosterone concentrations decreased significantly in this study and remained suppressed for at least 6 months. Until the end of the experiment 2 stallions reached prevaccination testosterone values. Also in the mentioned current field study (Burger, unpublished data), only 19/27 stallions (70.4%) showed normal values after 1 year, whereas 8 stallions (29.6%) had still basal values, 3 (11.1%) of them even after 2 years. Fertility of vaccinated stallions has not been documented scientifically so far. In the current field study, 34/50 stallions were supposed to breed the year after: 31 showed normal fertility, whereas 3 stallions (8.8%) were no more usable for breeding (too low testosterone level).

These data suggest that mentioned GnRH vaccines can be a useful tool for temporary management of undesirable sexual behaviour in adult stallions. Eventual manifestation of libido in immunized stallions is a phenomenon that has also been described following surgical castration. It must be noted, that the vaccine Equity™ appears to be much safer for use in horses than Improvac®. The duration of the inhibitory effect is highly variable, not clearly related to GnRH antibody titers and resumption of sexual activity and reversal cannot be guaranteed. The minimal age of vaccinated animals, dosage, number and interval of booster vaccinations required for an optimal effect need further investigation. For stallions with too low testosterone level over one year after vaccination, some promising trials aiming to support the GnRH axis during breeding season either with busereline (subcutaneous or implant) or desloreline (implant) are actually taking place.

References