

# Grazing News



Iowa State University  
Department of Animal Science  
Equine Science Newsletter & Updates

June 2011

## In This Issue

[Equine Herpes Virus](#)  
[Cyclone Horse Judging Camp](#)  
[Horse Judging Team Coaches Clinic](#)  
[Iowa State Fair 4-H Horse Show](#)  
[Management of the Equine Environment](#)  
[Equine Nutrition and Feeding](#)  
[Master Equine Manager 1](#)  
[Insect Pest Management](#)  
[The Immune Response to Exercise](#)  
[Tryptophan](#)  
[Iowa Horse Judges Directory](#)

## Quick Links

[Equine Science](#)  
[4-H Horse and Pony](#)  
[Iowa Horse Youth](#)  
[ISU Equine Extension](#)  
[Master Equine Manager](#)  
[Veterinary Clinical Sciences](#)  
[Ag Decision Maker](#)  
[ISU Extension Publications](#)  
[eXtension Horses](#)

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[The Working Horse](#)

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Below is new and updated information from Iowa State University Equine Science. If you have questions or comments about this message or the content listed herein, please contact me.

Peggy M. Auwerda  
Iowa State University Extension Horse Specialist  
E-mail: [peggy@iastate.edu](mailto:peggy@iastate.edu)  
Phone: 515-294-5260



## Upcoming Events

- [Cyclone Horse Judging Camp](#) - June 16th - 18th
- [Horse Judging Team Coach/Advisor Clinic](#) - June 16th
- [4-H Round-UP](#) - June 28th - 30th
- [Iowa State Fair 4-H Horse Show](#) - Aug. 8th-11th
- [Equine Nutrition and Feeding](#) - Starts Aug. 23rd
- [Management of the Equine Environment](#) - Oct. 1st
- [Master Equine Manager 1](#) - Starts Oct. 6th
- Iowa Horse Judges Certification Clinic - Nov. 5th
- Iowa 4-H Horse Judging Contest - Nov. 5th



Equine Herpes Virus

Several horses recently competing in the National Cutting Horse Association Western National Championship in Ogden, Utah, on April 29 to May 8, have been diagnosed with Equine Herpes Virus (EHV-1), according to 2011 Incident Information. Reports of affected horses have been received from multiple states and western Canada, with several fatalities. At this time, Animal Health Monitoring and Surveillance (APHIS) understands the virus to be present in horses that attended the cutting horse event and horses that came into contact with those that attended the event.

Dr. David Schmitt, DVM, Iowa Department of Agriculture and Land Stewardship was notified about some horses that developed the neurologic form of Equine Herpes Virus (EHV-1) after attending a national cutting horse event in Utah. "Five of the horses that attended the event are located at stables in Iowa," Schmitt said. "The good news is that I have still not had any reports of clinical disease in any of these horses in Iowa."

Peggy Miller-Auwerda, Iowa State University Extension equine specialist, said the APHIS situation report also indicates that the Iowa horses are under voluntary or state quarantine and are being monitored. "The virus can spread through the air, contaminated equipment, clothing and hands," Miller-Auwerda said. "EHV-1 infection in horses can cause respiratory disease, abortion in mares, neonatal foal death and/or neurologic disease."

EHV-1 is endemic to the United States and is usually handled by the states involved; USDA becomes involved in cases involving multiple states or movement of horses across state lines. APHIS will continue to monitor the situation and work with the states to make decisions as needed to control the spread of the virus. USDA has posted links with information about EHV-1 and a copy of the situation report at <http://www.aphis.usda.gov/vs/nahss/equine/ehv/>

Links to Sites with Useful Information on Equine Herpes Virus

- <http://www.extension.org/pages/58452/equine-herpesvirus-ehv-1-outbreak>
- <http://aqha.com/News/News-Articles/051411-Equine-Herpesvirus-Cases.aspx>
- [http://www.aaep.org/EHV\\_resourcesowner.htm](http://www.aaep.org/EHV_resourcesowner.htm)
- [USDA Initial EHV-1 Report](#)

eXtension has tweet's & updates the eXtension Horses Facebook page to keep users informed.

eXtension Horses Facebook page: <http://www.facebook.com/pages/Horses-eXtension/188346351177873>

eXtension Horses Twitter: <https://twitter.com/eXtensionHorses>

## Cyclone Horse Judging Camp

**WHAT:** A 3 DAY CAMP FOR YOUTH INTERESTED IN HORSES AND HORSE JUDGING. YOUTH WILL RECEIVE INSTRUCTION IN JUDGING BOTH CONFORMATION AND PERFORMANCE CLASSES. IN ADDITION, EACH INDIVIDUAL WILL HAVE THE OPPORTUNITY TO HAVE BOTH GROUP AND INDIVIDUAL INSTRUCTION AND FEEDBACK ON ORAL REASONS.

**WHEN:**

JUNE 16-18, 2011

**WHERE:**

IOWA STATE UNIVERSITY CAMPUS

**WHO:**

YOUTH AGES 12 TO 18 YEARS INTERESTED IN HORSES, JUDGING, MEETING OTHER YOUTH AND HAVING FUN!

CAMP FEES WILL INCLUDE ON-CAMPUS HOUSING, FOOD, INSTRUCTION AND EVENING FUN!



For questions: Contact Nikki, [nikkif@iastate.edu](mailto:nikkif@iastate.edu) or 515-294-3996

## Horse Judging Team Coach/Advisor Clinic

JUNE 16, 2011 at Iowa State University  
Check-in at 8:30am - Start at 9am



Coaches clinic for youth/4-H/FFA adult advisors, volunteers and coaches. Focus will be directed to Western and English events along with how to coach students to give oral reasons. ISU past and present horse judging team members will give example sets of written and oral reasons

### Schedule

OPENING REMARKS, INTRODUCTIONS AND GATHERING QUESTIONS FROM PARTICIPANTS TO BE ADDRESSED DURING THE DAY  
GIVING YOUR STUDENTS THE TOOLS THEY NEED  
UNDERSTANDING EVENT RULES - HUNTER UNDER SADDLE AND EQUITATION  
UNDERSTANDING EVENT RULES - WESTERN PLEASURE AND HORSEMANSHIP  
EXAMPLE CLASSES  
LUNCH  
SCORING ORAL REASONS  
EXERCISES IN TERMINOLOGY  
WRITTEN REASONS - GIVING FEEDBACK  
LISTENING TO ORAL REASONS - HOW TO LISTEN/WHAT TO LISTEN FOR  
PRACTICE LISTENING AND GIVING FEEDBACK  
OPEN DISCUSSION/QUESTION AND ANSWER SESSION  
LOOKING INTO THE SCORED CLASSES: REINING, WESTERN RIDING, TRAIL  
PROGRAM EVALUATION AND FINAL COMMENTS

### SPEAKERS TO INCLUDE:

NIKKI FERWERDA, ISU HORSE JUDGING TEAM COACH  
PAST/PRESENT ISU HORSE JUDGING TEAM MEMBERS  
ISU JUDGING TEAM FINISHED 4TH IN ORAL REASONS AT THE 2009 APHA SPRING SWEEPSTAKES AND  
HAD INDIVIDUALS PLACING IN THE TOP TEN IN EACH DIVISION: HALTER, PERFORMANCE AND REASONS AT THE CONGRESS, QH WORLD SHOW, AND ARABIAN NATIONALS

For questions: Contact Nikki, [nikkif@iastate.edu](mailto:nikkif@iastate.edu) or 515-294-3996

## IOWA STATE FAIR 4-H HORSE SHOW Entry Deadline July 1st to County Office

### Schedule

#### Monday, August 8

3:00 pm Horses May Arrive

#### Tuesday, August 9

8:00 - 11:00 am Horses May Check-In

11:00 am Horses Must Be In

1:00 pm Jacobson Exhibition Center - Exhibitor's Meeting

2:00 pm Jacobson Exhibition Center - Ranch Horse Pleasure, Poles, Barrels



Livestock Pavilion - Pony Showmanship, Pony  
Pleasure, Hunter Under Saddle, Hunt Seat Equitation, Saddleseat Pleasure,  
Saddleseat Equitation

**Wednesday, August 10**

8:00 am Jacobson Exhibition Center - 5-8 Showmanship, 5-8 Horsemanship, Trail  
Outdoor Arena - 9-12 Showmanship, 9-12 Horsemanship, Reining

**Thursday, August 11**

8:00 am Jacobson Exhibition Center - 2 & 3 yr old Western Pleasure, Western Pleasure  
starting with 5th grade

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## WANTED

At the Iowa State Fair Championship Awards are given. The award is determined by bringing the 1st & 2nd place person back within a grade group for a championship class. I am looking for sponsors for the following Championship Classes - Light Horse Junior Exhibitor Showmanship, Light Horse Senior Exhibitor Showmanship, Hunt Seat Equitation and Saddleseat Equitation. Each sponsorship is \$125 which covers the grand and reserve prize. If you are interested in sponsoring the class please contact Dr. Peggy Auwerda at [peggy@iastate.edu](mailto:peggy@iastate.edu) or 515-294-5260.



## Management of the Equine Environment

Saturday, October 1st

8:30 am - 4:30 pm

On-line or you are welcome to attend at Iowa State University (Brenton Center for Agricultural Instruction and Technology Transfer, Curtiss Hall) . This course is open to all individuals. The program is targeted toward horse owners, trainers, breeders, veterinary technicians, and individuals with an interest in horses.

Management of the Equine Environment provides an opportunity to investigate the requirements of operating a successful horse establishment. Exploring barn set-up, barn hygiene, air quality, fencing and pasture maintenance and improvement will ensure the health and safety of the horses housed at any facility. This course provides practical and current information needed to ensure a safe and healthy environment for horses, through effective and responsible management techniques.



Time	Topic	Speaker
8:30	Stable Design – Stalls, Arenas, Shelters, Bedding, Air Quality	Dr. Peggy Auwerda Department of Animal Science Iowa State University
9:15	The Horse – Pasture Grazing Basics – Benefits of grazing, Fencing, Rotational grazing, Sacrifice Areas	Dr. Peggy Auwerda
10:30	Break	
10:45	Nutrient Management - Living with manure, Storage, Composting	Dr. Thomas Bass Montana State University Extension
11:30	Water Quality	Dr. Steve Emsley Vet Diagnostic & Production Animal Med Iowa State University
12:30	Lunch	
1:15	Pasture Plants and Pasture Renovation Soil Fertility Management - How to interpret soil test results, Soil acidity, Macro and micro nutrients, Types of fertilizers	Dr. Stephen Barnhart Agronomy Iowa State University
3:15	Break	
3:30	Weed Management –What is a weed?, Common weeds in horse pastures, Weed biology and management	Dr. Robert Hartzler Agronomy Iowa State University

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[www.extension.iastate.edu/masterequine/registration](http://www.extension.iastate.edu/masterequine/registration)

For More Information: Dr. Peggy M. Auwerda, 119 Kildee, ISU, Ames, IA 50011. 515-294-5260

Email: [peggy@iastate.edu](mailto:peggy@iastate.edu)

## Equine Nutrition and Feeding August 23rd - December 6th Tuesday Evenings 6:00-8:00 pm

The 14-week program is an undergraduate course that is offered on a noncredit basis to horse owners, trainers, feed sales representatives or anyone interested in the topic.

The course is designed to assist students and equine owners in the feeding management of their horses. Course material will include digestive physiology, factors affecting digestion, determining your horse's nutrient requirements, nutritional diseases, selecting feeds, water quality and evaluating commercial feed labels. The course will assist producers in utilizing forages to meet a horse's requirements, pasture management, weed control and identification, and poisonous plants. Also included will be managing a feeding program for mature horses, performance horses, broodmares, foals, weanlings, yearlings and stallions. Participants will develop the skills for nutritional assessment using the computer program REINS



This course will take place every Tuesday evening, 6-8:00 pm, starting August 23rd and ending December 6th. Students will need to be able to utilize their computer for this time period since the lectures will be delivered in real time via Adobe Connect. Students will

need a high-speed Internet connection to participate in the course. Lectures will be recorded.

### Registration Forms for Non-Credit

Course Fee for non-credit - \$350 which includes a copy of REINS

[www.extension.iastate.edu/masterequire](http://www.extension.iastate.edu/masterequire)

For non-ISU students who wish to obtain college credits for the course you would simply fill out an online registration form found here: <https://accessplus.iastate.edu/NonAuth/R404/R4048.jsp>

For More Information: Dr. Peggy M. Auwerda, 119 Kildee, ISU, Ames, IA 50011. 515-294-5260

Email: [peggy@iastate.edu](mailto:peggy@iastate.edu)

## Master Equine Manager 1 Starts October 6th

The Iowa State University Extension (ISUE) Master Equine Manager Program is designed to provide applicable information to the horse owner on horse care and management. The program consists of six 2-hour internet sessions which includes behavior, nutrition, pasture management, facilities, equipment, selection and evaluation, diseases, parasites and hoof care. A two-day hands-on skill development session coincides with the on-line program. The hand-on sessions covers forages, feeds, health care, hoof care, facilities, selection and behavior. For the total program you will receive 24 hours of equine science and management.

The on-line portion of the program will be held Thursday evenings from 6 to 8 pm starting October 6th. The two-day hands-on activities will be held November 11th & 12th.

For more information go to <http://www.extension.iastate.edu/masterequire>



Looking for Parasites

## Insect Pest Management

The time of year is here for nuisance and blood-feeding flies, lice, and ticks that attack horses. There are several measures you can take to manage these pests. First of all control measures should include a good sanitation program. Flies breeding sites include where manure, plant debris and mud accumulate. If you modify or manage these areas you

can reduce the fly population. Spreading manure promotes drying and prevents larvae from developing. Using wood products decreases fly populations compared to straw. Feeding with feed bags or buckets is helpful compared to feeding on the ground. Cleaning water troughs and automatic waterers will decrease fly as well as mosquito populations. If a horse is kept in a stall the use of fans keeps pests off of the horse. If you have screened windows you can spray them with a residual insecticide to create a protective barrier. Chemical control directed at larval and adult stages is usually required during the season. Pyrethins and pyrethroids are the most common active ingredients in insecticides for horses. Pyrethins provide a quick knock down of insect pests. Pyrethins are broken down by sunlight so the protection only lasts a few hours. To increase the effectiveness of pyrethins, piperonyl butoxide is added. Pyrethroids include cypermethin, permethrin and resmethrin. These are synthetic forms of pyrethins. Pyrethroids are more stable so an application usually lasts for several days. Listed below are good references for a more thorough description of insect control, insecticides and comparison among products. Always follow label recommendations for rate and frequency of an pesticide you use on horses.



Stable Fly

#### References

<http://www.extension.org/pages/23393/horse-flies-and-deer-flies>

<http://www.drsofostersmith.com/pic/article.cfm?aid=1574>

<http://www.ca.uky.edu/entomology/entfacts/ef513.asp>

## The Immune Response to Exercise

by Alexandra Nettleton  
Senior, Department of Animal Science

The immune system is an important system in the body that protects the body from foreign materials or organisms that get into the body. It does this mostly through identification of the threats and then the destruction of them by phagocytic cells. Like everything else in the body, this system is affected by exercise. The parts of the immune system that are affected are the number of cells that defend the body and the phagocytic cells' activity. Some of the immune system responses are suppressed while others are enhanced or increased after exercise.

Many cells in the immune system are affected by exercise. Macrophages, neutrophils, leukocytes, natural killer cells and antibodies are just a few that are affected. Neutrophils, macrophages and natural killer cells are cells that defend the body against foreign materials by phagocytosis or engulfing the materials and breaking them down. Antibodies or immunoglobulins, in mucosal secretions are the first line of defense for the body against pathogenic microorganisms. (K. Malinowski) They create a barrier to the pathogenic microorganisms that try to colonize the tissues where the immunoglobulins are present (B. K. PEDERSEN).

The effects of exercise on the immune system are enacted through hormones and it increases the phagocytic activity of some cells while also suppressing immunoglobulin levels and other phagocytic activity following the intense exercise. When immunoglobulins are suppressed the body is more susceptible to pathogenic attack. However, as this first line of defense is suppressed another defense is enhanced. The phagocytic cells of the immune system are generally increased in number in the blood after exercise. Their capacity for phagocytosis is also increased. They are able to be more efficient at disposing of pathogenic microorganisms (Clilton K O Ferreira).

These effects are dependent on the level of exercise that the animal is exposed to and are temporary. The immune system recovers usually within a day and in the long run recovers to a level

that is better than what it started as. This is shown in Table 1 below in antibody levels in ponies before and after they were subjected to an exercise program. This study was conducted to determine the effects of exercise on the levels of antibodies against a certain virus, the equine influenza virus, but it stands to reason that the same could be said of other antibody levels for other pathogenic microorganisms that the animal is exposed to. As Table 1 below shows, the titre or concentration of antibodies three weeks after the exercise challenge increased dramatically in the ponies that were not rested. The greatest change was in the ponies without any prior immunity to the virus that the study used for testing. These changes are expected, though possibly not as great of changes, when animals are exposed to a pathogenic microorganism.

**TABLE 1: Mean  $\pm$  s.d. antibody titres to equine influenza virus**

	Ponies	Pre	Post
<b>ELISA</b>	Rested	12 $\pm$ 6	12 $\pm$ 6
	Exercised	9 $\pm$ 3	18 $\pm$ 5
	Naïve	Nil	56 $\pm$ 8
<b>Serum Neutralizing (SN)</b>	Rested	136 $\pm$ 46	168 $\pm$ 55
	Exercised	52 $\pm$ 26	112 $\pm$ 16
	Naïve	Nil	56 $\pm$ 8

Sera samples were collected prior to challenge (Pre) and 3 weeks post-challenge (Post); ELISA units were determined from a standard curve run for each assay; SN titres were determined as that final serum dilution which failed to neutralize the virus (R. W. FOLSOM).

The level of exercise that is needed to affect the immune system's function is dependent on the animal that is being exercised. In general the level of exercise is moderate to high intensity. These levels of exercise induce a stress that the body reacts to by producing hormones. These hormones mediate responses throughout the body and affect the function of the immune system as discussed earlier. In Figure 1 below, the effects of different levels of exercise on the number of lymphocytes, the activity of some phagocytic cells and antibody production are shown. After an intense exercise program there is a period of immuno-suppression, also called the 'open window'. During this time the body is more susceptible to pathogens. As discussed earlier the activity of the macrophages and neutrophils are increased after an intense exercise program. The other phagocytic cell types, natural killer cells for example, are suppressed just like the lymphocyte number and the antibody production.

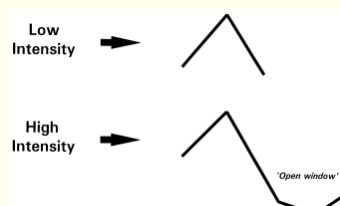


Figure 1: Intensity of exercise vs. its effects on the Immune System

Figure 1. Schematic presentation of the effects of exercise at low and high intensity with fixed duration of time. In the model is included the exercise-effects on lymphocyte number, natural killer and lymphokine activated killer cell activities and antibody production. In contrast to moderate exercise, intense exercise is followed by a period of immuno-suppression during which there is an 'open window' of opportunity for pathogens (B. K. PEDERSEN).

Exercise has many effects on the immune system. These effects are mediated through hormones and function to either suppress or enhance the function of different parts of the immune system. After a high intensity exercise antibody production, one of the

first lines of defense in the body, is suppressed. The activity of natural killer cells is also suppressed and lymphocyte numbers are decreased. All of these responses occur after a high intensity exercise during the 'open window' period. The body has developed an effective strategy to counter the 'open window' that occurs after a high intensity exercise program. Not all of the phagocytic cell activity is suppressed by the hormones secreted in response to the exercise program. Macrophages and neutrophils are enhanced after exercise and their phagocytic activity is increased, thus at least partially countering the suppression of the other parts of the immune system.

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4. R. W. FOLSOM, M. A. LITTLEFIELD-CHABAUD, D. D. FRENCH, S. S. POURCIAU, L. MISTRIC, D.W. Horohov"Exercise alters the Immune response to equine influenza virus and increases susceptibility toinfection." *Equine Veterinary Journal* 33.7 (2001): 664-669

## Tryptophan

by Katie Spenler

Senior, Department of Animal Science

Tryptophan is used in many calmativ products for horses. The calming effect of tryptophan is due to its conversion to serotonin, which causes sleepiness and sedation as well as a decrease in aggression, fear and pain. However tryptophan's exact role within the sedative has not been proven due to current methods of administration with other drugs (Grimmett et al., 2005). This study's purpose is to identify tryptophan's effect on horse's behavior, and blood concentration levels (Noble et al., 2008).

Tryptophan is an essential amino acid not produced by the body. Tryptophan is ingested and subsequently absorbed into the blood plasma. The plasma protein albumin binds to tryptophan to inhibiting absorption into other tissues and decreasing the amount of resistance between tryptophan and large neutral amino acids (LNAA). For tryptophan to have an effect on the body it must pass the blood brain barrier into the central nervous system where it is converted into serotonin. However, tryptophan has to compete with other LNAA to enter the central nervous system. Therefore the amount of tryptophan in the central nervous system is dependent upon the amount of LNAA. The amount of tryptophan also relies on the amount of free fatty acids. Consumption of a high fatty meal increases the amount of free fatty acids in the blood which causes an increase in tryptophan (Grimmett et al., 2005).

The central fatigue hypothesis is thought to be caused by tryptophan. This hypothesis says that as exercise occurs there is an increase in free fatty acids and a decrease in LNAA, which causes an increase in tryptophan. Therefore, it is believed that the reason for fatigue after exercise is caused by tryptophan. However, this theory is not been widely accepted and still needs to be thoroughly tested because of other possible causes of the fatigue (Grimmett et al., 2005).

Previous studies have been done to see the affects of tryptophan in horses. One study, done by C.S. Bagshaw et al., observed the effects of tryptophan on horses in high acute isolation stress. The horses were given tryptophan then put into an enclosed stall where their behavior was observed. The results showed the tryptophan did not have a sedative effect on the horse's behavior. However one mare demonstrated a decreased amount of head twisting after being given a high dose of tryptophan concluding a possible sedative effect (Bagshaw et al., 1994).

The purpose of this study was to evaluate the effects of tryptophan on horse's behavior after being feed a hay or grain diet. The amount of tryptophan in the blood plasma was also tested to

see if oral tryptophan had an effect on tryptophan in the blood. The amount of tryptophan used was based on the commercial amount used in calmativ products. The amount of tryptophan given was 6.3g, a large commercial dose. Gain and hay were part of the evaluation because the amount of sugar and carbohydrates in grain might mitigate the effectiveness of a tryptophan calming agent (Noble et al., 2008).

In the study 12 thoroughbred geldings were used. They were randomly split into two groups of six horses and housed in stalls. The horses were first fed a hay diet. The amount of hay was determined by the horse's body weight. They were fed three times a day unless blood was being drawn, in which case only two feedings would occur. At the last feeding of the day the horses received minerals and vitamins. Unconsumed hay was discarded. The horses remained in stalls and received one hour of exercise on a mechanical horse walker (Noble et al., 2008).

For the first part of the study all horses had indwelling jugular cannulas inserted to facilitate blood drawing every 30 minutes. After an hour of blood drawing, oral tryptophan was given to group A and water was given to group B. The horses were given hay, and blood drawing continued for five more hours. The blood was spun by a centrifuge and the plasma was drawn off to be tested from amino acid concentrations. The blood analysis was done to test for L-tryptophan and LNAA. The LNAA were tyrosine, leucine, isoleucine, and phenylalanine. The pack cell volume of the blood was also measured. The horses continued their normal routine of being fed hay and exercising for four days until the next test started (Noble et al., 2008).

The next part of the study evaluated the behavioral changes observed by the horses. The tests were done over three days so two horses from each group were tested every day. For each horse the test was repeated three times. For this test the horses had a heart rate monitor and a pedometer, to measure walking distance. The groups received the same treatments. Two hours after administration the horses were lead to an indoor arena where three different tests were performed (Noble et al., 2008).

The first test was an empty arena with two circles draw, one inside the other, on the ground. The purpose of the circles was to see how far the horses moved. The observer was blind to treatment and observed the horses for specific behaviors every ten seconds. After ten minutes the horse was taken back to the starting corner and an unfamiliar person stood in the middle of the circle. The horse was observed and the data was recorded (Noble et al., 2008).

After ten minutes the horse was moved to the starting corner and a novel object was placed in the center of the circle. The novel objects were a foam box, pom-poms, a sports trophy and a flag. The novel object was changed so the horse did not become familiar with an object. After all horses were tested, the horses returned to the original schedule for seven days until the groups were reversed so group A received water and group B received tryptophan. All the tests were then performed again with the new treatments. The tests were then repeated with the horses receiving oats instead of hay (Noble et al., 2008).

The results of this study showed that there was no change between the glucose levels in the control or tryptophan treated group regardless of feeding hay or grain (see figure 1a and 1d). In both groups tryptophan increased significantly more than the control (see figure 1b and 1e). The hay group did show a higher amount of tryptophan in the blood for a longer period of time then the oats group. This increase is thought to be because digestion of hay is longer than oats. It also showed that there was an elevation in the ratio between tryptophan and LNAA (see figure 1c and 1f). The oats group showed a constant increase in the ratio beginning at two hours, which was not observed in the hay group. There was no difference in the minimum heart rate but the horses being fed oats with tryptophan had a higher maximum heart rate than the control group being fed oats. There were no behavioral changes between the horses feed oats versus hay (Noble et al., 2008).

The results of this study showed that when tryptophan is given orally it increases the tryptophan concentration of plasma. Since the first study done with hay showed no changes in behavior the study was done with oats. This study also showed no effect on behavioral changes. This led to the conclusion that giving tryptophan as a calmativ is ineffective in horses, especially at the concentrations given in products that are available. Further studies need to be conducted to see if a higher dose will have an effect on the horse's behavior (Noble et al., 2008).

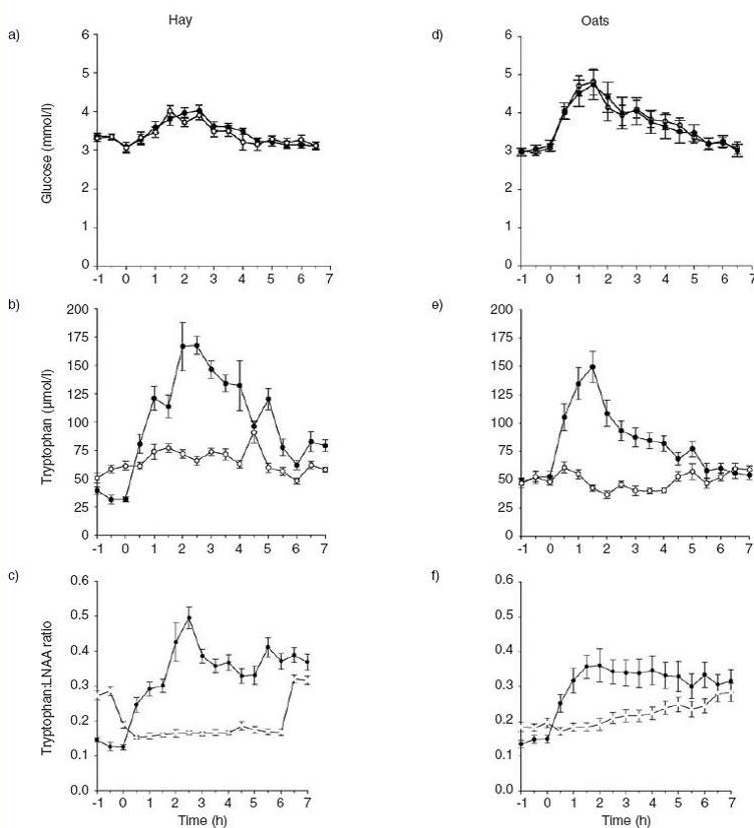


Figure 1. (Noble et al., 2008)

A study was recently done in 2010 to further study tryptophan in horses. The purpose of this study was to examine the effects of two different diets, one with high fiber and one with high starch, to see the difference in plasma tryptophan, serotonin, lactate and pH levels to observe the effects of different feeding time and gender. The studied observed that mares had higher serotonin and tryptophan levels than geldings. However mares on the high starch diet had lower tryptophan compared to the high fiber diet and gelding on the high starch diet had a higher tryptophan compared to the high fiber diet. This did not observe the behavior of the horses just the difference between the two genders so there still needs to be more study done on the behavioral effects of tryptophan (Alberghina et al., 2010).

This study showed that tryptophan given orally increases levels of tryptophan in plasma but showed no affect on behavior (Noble et al., 2008). The research that has been done has made a good basis for future studies. These studies should explore the effective amount of tryptophan that can be given without causing negative side effects. Studies should also be done to determine the effect of calmatives products on horses and the effects of the other ingredients in calmatives. Completion of these studies will more fully elucidate the role of tryptophan in horses.

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[2011 Iowa Horse Judges Directory](#)

[2011 Ring Stewards Directory](#)



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