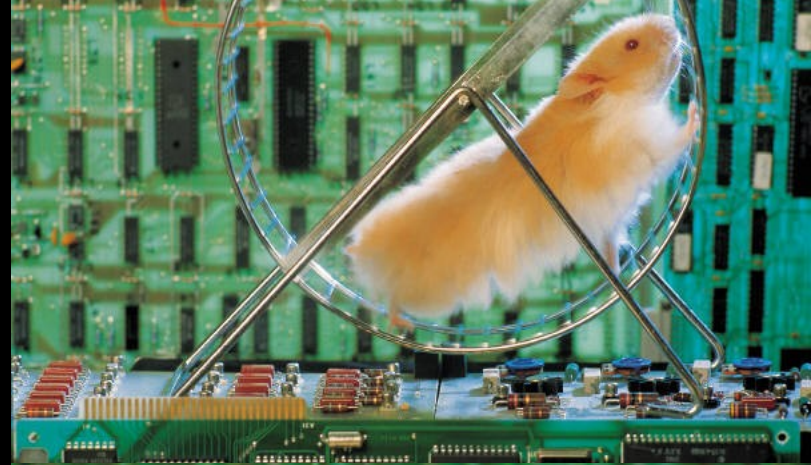


Nutrition of Lagomorphs and Rodent Species



Rabbits



- *Belong to the order “Lagomorph”*
- *Non-ruminant herbivores; high forage diet*
- *Have specialized digestive tract similar to horse*
- *Have a “circadian rhythm” in digestion*

Rabbit Digestive System

- *Sharp incisors allow for cutting any forage or woody plant*
- *Large upper and lower biting incisors and large **diastema** to accommodate long forages*
- *Incisors need constant work to maintain ideal size*



Rabbit Digestive System

- *GI tract is very similar to horse up until the large intestine*
- *Large cecum contains bacteria to break down plant cell walls*
- *Nervous system keeps microbial activity normal during the day and rabbit makes normal fecal pellets*

Rabbit Digestive System

- ◻ Circadian Rhythm changes GI motility and **cecotropes** are formed
 - ◻ Fecal pellets with high concentration of protein, low fiber
 - ◻ Rabbits eat cecotropes directly from the anus and digest them in small intestine, allowing rabbit to “capture” amino acids
 - ◻ Allows rabbit to survive during seasons when only low-protein fibrous plants are available

Cecotropes are more commonly known as Night Feces

All Poop is not Created Equal

- *Rabbits make both hard and soft feces*
 - *Soft Feces (cecotropes): contain higher levels of water, electrolytes and nitrogen. Covered by a soft mucous envelop*
 - *Hard Feces: contain higher levels of fiber*
- *Rabbits never eat hard feces or soft feces that have dropped to bottom of cage*

Coprophagy = consumption of feces

Cecotrophy = consumption of cecotropes

Problems in Rabbit Digestion

▣ Gastric Stasis:

- > Condition where gastric motility is slowed because of too much grain and too little fiber in diet
- > Huge quantities of hair build up in GI tract causing **Trichobezoars**, which get stuck in the tract. Can cause death

What is the more commonly known term for Trichobezoars?

Hairballs!



What to Feed Rabbits

- ▢ *Alfalfa-based pellet with hay supplement given daily*
- ▢ *Include fresh greens or veggies daily*
 - ▢ *Carrots, ripe bananas, rice cakes, dandelion leaves, dark leafy veggies, feed many colors*
 - ▢ *Beware fruit pits and seeds*

Remove any uneaten parts – spoiled food causes GI upset

What to Feed Rabbits

- ▮ *Rabbits are nocturnal: feed hay in morning and pellets with grains in afternoon or evening.*
- ▮ *Water ad libitum*
- ▮ *Commercial feeds should be purchased and consumed within 90 days of production*
- ▮ *Pellets high in calcium or Vit D can cause kidney or bladder stones*

Commercial mixes w/ seeds, dried fruit or colored cereals are junk food. Too high in sugars and CHO, can cause overgrowth of bad bacteria!

What to Feed Rabbits

- *Hay is most important factor in diet – prime source of fiber*

- *Fresh Timothy, Oat and Grass Hays*

**BEWARE
MOLDY
HAY!**

- *Buy pellets from feed store or online. Avoid grocery & pet store chains – feed may be many months old*

- *Exercise for 3-5 hours daily outside of cage*

Rodents

- ✓ *Guinea Pigs*
- ✓ *Gerbils*
- ✓ *Hamsters*
- ✓ *Rats and Mice*
- ✓ *Chinchillas*



Guinea Pigs

- *Large rodent, indigenous to Peru*
- *Notoriously fastidious eaters*
- *Herbivores with cecotrophic behavior*
- *“Cavies”*



What to Feed Guinea Pigs

- *Fresh guinea pig pellets (18-20% crude protein and 10-16% fiber)*
- *Unlimited supply of quality grass hay*
- *Fresh, clean water ad libitum*

What Water
Soluble
Vitamin is
Considered
Essential in the
Guinea Pig?
Vitamin C

Vitamin C

▮ Deficiency of Vitamin C causes a disease condition called Scurvy

▮ Signs of Scurvy include

▮ Lethargy, weakness, unwillingness to move

Hopping instead of walking, enlarged or stiff limb joints

Not eating, loss of weight

Diarrhea

Eye and nose discharge

Rough coat

Tenderness to touch (may cry out in pain if restrained), poor flesh condition

Internal skeletal-muscular hemorrhage

Guinea Pigs and Vitamin C

- ▮ *Vit C **MUST** be included in diet*
 - ▮ *Optimal amount is 1 to 2 mg per 100 grams of body weight*
- ▮ *Commercial guinea pig pellets contain extra Vit C, but only good for ~90 days*
- ▮ *Can add Vit C to water, but it's light sensitive and loses 50% of potency in 24 hours. Cover the bottle with sock or foil*

Guinea Pigs and Vitamin C

- *Can supplement diet with veggies and fruits high in Vit. C*
- *Guava, orange and lemon peel; parsley, brussel sprouts, broccoli, collard, mustard greens and kale*
- *Chewable Vit C tablets*

Guinea Pigs and Grass Hay

- *Very important – feed ad libitum*
- *Timothy hay best – less calcium and protein than alfalfa, which interfere with pellets*
- *Long fibers stimulate muscle contraction in intestines to maintain motility*
- *Chewing hay helps grind down molars which are constantly growing*

Guinea Pigs and Pellets

- ❑ *Must use Guinea pig pellets*
- ❑ *Don't use "fiesta" mixes with seeds, nuts and dried fruit – pigs don't like high CHO or fatty foods*
- ❑ *Adults prone to obesity, so limit pellet intake*



Gerbils

- Omnivore, desert dwelling rodent
- High metabolic requirements
- Eat ~10% of body weight every 24 hrs
- Diet mostly of grains, other CHO



What to Feed Gerbils

- *Pellets made from ground seeds and grass and vitamin fortified*
- *Remove sunflower seeds from mixes; fattening*
- *At least one piece of fresh veggie per day*
- *Can give a cricket or two a few times per*

Use an elevated feeding bin to prevent fecal contamination

Gerbils and Water

- ❑ *Desert animals, therefore very efficient kidneys. Rely primarily on plants fluids in the wild*
- ❑ *Give plenty of fresh water*
- ❑ *Make sure container is clean!*



Gerbils and Treats



- ▢ *Sunflower seeds and pieces of fruit in small amounts*
- ▢ *Front teeth are constantly growing – give chew sticks or pieces of fruit tree branches or bark to wear teeth down*
- ▢ *Avoid cherry, cedar and oleander – TOXIC!*

Plain dog bones make good nutritious treat!



Hamsters

Hamsters

- *Desert-dwellers*
- *Eat 10% of body weight every 24 hours*
- *Diet mostly of grains and other CHO and fresh water*
- *Restrict amount of sweet or oily food*



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Hamster Feeding Behavior

- ▮ *Can carry up to ½ body weight in cheek pouches*
- ▮ *In the wild, may hide up to 60lbs of grain for winter*
- ▮ *Sometimes they urine-mark. Food can become moldy if they urine mark their stash*
- ▮ *Sometimes engage in coprophagia for more complete digestion*

What to Feed Hamsters

- *Require grains and lots of fresh fruits & greens (broccoli, peas in the pod, melons, etc.)*
- *Avoid iceberg lettuce and apples (too high in water and fiber)*
- *Try to avoid overfeeding; let hamster fill pouches*

Rule of Thumb: feed only enough for the day and a little for the next morning; remove leftover fruit and veggies!

Hamsters, Treats and Water

☐ *Sunflower seeds in small amounts*

☐ *Pet store snacks are good*

☐ *Fresh water in sipper bottles*

☐ *Change water daily and run thru dishwasher weekly to kill bacteria*



Rats and Mice



Source: Wikipedia

Rat & Mouse Feeding Behavior

- *Eat ~10% of body weight daily*
- *Indiscriminate eaters so must give them a complete diet!*
- *Careful what you feed, as they will eat anything – even things not good for them (ex. May choke on peanut butter)*

What to Feed Rats & Mice

- *Basic diet of kibble or lab blocks, & add small amounts of leafy green veggies*
- *Commercial rat or mouse chow is available*
- *Can feed cooked meat as a small treat
(leave it on the bone – rats/mice use bone to wear down teeth)*

**Buy only enough pellets to feed for 3 months at a time...
nutritive value decreases in 3-5 months**

Rats, Mice Water and Treats

- ▮ *Fresh water daily and clean bottle*
- ▮ *Sunflower seeds & small pieces of fruit and veggies are good snacks*
- ▮ *Chew sticks for continually growing incisors. Avoid cherry, cedar and oleander*

Chinchillas

- *Herbivores*
- *Require high fiber, vitamin-rich diet*
- *Most crucial part of diet is unlimited access to grass hay (Timothy, Brome, Oat and Wheat Hay).*
- *Also need commercial chinchilla pellets*



What to Feed Chinchillas

- *<8 months: plain alfalfa pellets available always*
- *Older chinchillas: feed 1-2 tblsns fresh commercial pellets per day; grass hay available always*
- *Use fresh pellets (not older than 3 months)*
- *Avoid pellet mixes with nuts and grains – can cause obesity*

What to Feed Chinchillas

- *Dried fruit (apricots, pineapple, papaya) basil, broccoli leaves, carrots and carrot tops, green peppers, kale, raspberry leaves, squash, dandelion leaves – all in small amounts*
- *Small amount of raisins help with constipation*

Chinchilla Feeding Behavior

- *Chewing and gnawing are daily habits. Nocturnal, chew furniture, cords and plants*
- *Branches of maple, birch or bark from apple, peach and pear trees help*
- *Avoid cherry, oleander, cedar, plum or redwood – all are toxic*
- *Require a dust bath to keep fur clean*