

Which Reward? Jade Tuttle, North Carolina Zoo

Phytoestrogens are plant-derived xenoestrogens (see estrogen) not generated within the endocrine system but consumed by eating phytoestrogenic plants. Also called "dietary estrogens", they are a diverse group of naturally occurring nonsteroidal plant compounds that, because of their structural similarity with estradiol (17-β-estradiol), have the ability to cause estrogenic or/and antiestrogenic effects,[1] by sitting in and blocking receptor sites against estrogen (Wikipedia)

In 2007, a few years after introducing four younger females to a new yard with our 1.2 white rhinos, keepers noticed breeding behaviors had stopped. There was no more chin resting, mounting or breeding. We believed at least one of the females was pregnant but had no way to be certain. As the eager keepers we are, we began diligently conditioning our rhinos for blood collection to try and monitor hormones. We brought them off the 40 acre yard three or four times a week, each animal spending significant time being desensitized to our restraint device and the blood collection process. A pile of loose alfalfa, often mixed with timothy hay to extend the bounty, was presented to each animal as we worked to memorize and perfect the location of the radial veins. And the animals just kept getting fatter....they must be bred!

No. Not one of our females was pregnant. In fact, our bull rhino was no longer viable. Those big round tummies were just too many calories. However, as the commercials say, 'that stubborn belly fat is difficult to lose'.

The herd has been through a lot of changes since 2009 and each one seems to require us to teach them something new. I can't say enough of the team of keepers who tackle anything put before them, from rectal ultrasounds and artificial inseminations to voluntary dental checks and several different researchers requesting various data. Through all of our new training we have been conscientious of what we are using as a reward. There was concern for their weights, their teeth and phytoestrogens, and as the team moved from desensitization/acclimation to more defined behaviors we found a need to improve the timing of the reward. With the understanding that every institution and every individual animal are going to be different, here is a brief summary of what we have worked through.

Tactile rewards are great for secondary re-enforcers and are used as much as possible during any chute work, but not highly motivating for our herd. A good udder rub can keep a rhino motionless, generally with one leg kicked up, for several minutes during an ultrasound but usually isn't enough by itself to call them off the yard. I have heard from several other keepers that use belly scratches for hoof work and other husbandry needs. The benefit, if it works for your animals, is obvious because there is nothing consumed.

Using part of their diet is also a great way to keep from adding extra food. Our herd is on a 'green diet' and only receives 1 scoop= 3lbs. of grain a day which is generally used to shift them back up the 50 ft. hill chute onto exhibit. Our geriatric rhinos have more grain in their diet, and we do use it for chute work such as blood collection or topical treatments. However, the animals learn pretty quickly they can grab a big mouthful and leave the restraint area for several minutes, still happily chewing away on their grain, and come back for another bite. Or they can drag the grain forwards or backwards, generally just out of reach of where we need them. We use timothy pellets in a similar way with our younger, 'dieting', rhinos but the same problems with stationing and the duration of reward arise. The benefit is our animals value the timothy pellets almost as much as their Wild Herbivore diet while nutritionally it is comparable to a good flake of hay, which they don't value very much. (Especially in the summer when the grass is good and green). The pellets are most useful when asked to stay in place in a restraint for longer periods of time, such as a mud bath or public meet and greet, and there are only one or two keepers needed.

Timothy cubes, on the other hand, have become our go-to reward. At about the size of a piece of sidewalk chalk they are nutritionally similar to the timothy pellets but big enough to feed one at a time and still keep the animals' interest. We place a couple on the ground for chute work, toss a small handful into a stall for shifting, and hand feed one at a time for recall or target work outside. For behaviors requiring increments in training it is easier for keepers to optimize their timing with the cubes and they are more manageable in a training pouch or apron as well.

While participating in a diet study we were asked to remove all phytoestrogens, so products with alfalfa or soy were off the table. Now that the study is over, we do use alfalfa on occasion and it remains our most motivating reward but we are conscious of the use. As a legume it is different from most dry hays and is a higher source of not just phytoestrogens but protein (excess nail growth/weight gain) and iron (iron storage disorders) as well. That is why it is kept to a minimum as a big 'jackpot' reward in training new behaviors or treating dire medical needs.

Vegetables Nutrition Facts

Raw, edible weight portion. Percent Daily Values (%DV) are based on a 2,000 calorie diet.

Vegetable	Calories	Carb. (g)	Fiber (g)	Fat (g)	Iron (mg)	Protein (g)	Sodium (mg)	Vitamin A (%DV)	Vitamin C (%DV)	Other
Asparagus (1/2 cup, raw)	20	0	1	0	0	1	0	0	0	
Bell Pepper (1/2 cup, raw)	25	0	0	0	0	1	0	10%	15%	2%
Broccoli (1/2 cup, raw)	45	0	1	0	0	1	0	4%	100%	2%
Carrot (1/2 cup, raw)	30	0	1	0	0	1	0	100%	10%	2%
Cauliflower (1/2 cup, raw)	25	0	1	0	0	1	0	0%	100%	2%
Celery (1/2 cup, raw)	15	0	1	0	0	1	0	0%	10%	2%
Cucumber (1/2 cup, raw)	10	0	1	0	0	1	0	0%	0%	2%
Green (String) Beans (1/2 cup, raw)	20	0	1	0	0	1	0	0%	10%	2%
Green Onion (1/2 cup, raw)	25	0	1	0	0	1	0	0%	20%	2%
Green Onion (1/2 cup, raw)	10	0	1	0	0	1	0	0%	2%	2%
Iceberg Lettuce (1/2 cup, raw)	10	0	1	0	0	1	0	0%	0%	2%
Leaf Lettuce (1/2 cup, raw)	15	0	1	0	0	1	0	100%	0%	2%
Mushrooms (1/2 cup, raw)	20	0	1	0	0	1	0	0%	0%	2%
Onion (1/2 cup, raw)	45	0	1	0	0	1	0	0%	20%	2%
Peas (1/2 cup, raw)	110	0	1	0	0	1	0	0%	0%	2%
Red Onion (1/2 cup, raw)	10	0	1	0	0	1	0	0%	0%	2%
Summer Squash (1/2 cup, raw)	20	0	1	0	0	1	0	0%	20%	2%
Sweet Corn (1/2 cup, raw)	90	20	2	0	0	1	0	5%	2%	2%
Sweet Potato (1/2 cup, raw)	100	0	1	0	0	1	0	7%	100%	2%
Tomato (1/2 cup, raw)	25	0	1	0	0	1	0	30%	0%	2%

Note: Most vegetables provide negligible amounts of saturated fat, trans fat, and cholesterol.

U.S. Food and Drug Administration
October 1, 2008



This is relevant to the grazing White rhinos, and the North Carolina Zoo's herd in particular. I have been told many tales of white rhinos who like peanuts, apple sauce, bread and other produce. Ours will not have any of it, and will spit out a whole wad of alfalfa if you try to sneak half a saltine in with it. The black and GOH rhinos often have produce in their diet, which can easily be held back for training, and past experience has said a lot for the motivation of a little branch of sweetgum or fresh grass. Animals housed individually and/or often in a barn usually value the tactile attention of a keeper much more than our social free-grazing whites as well. With the understanding that all things are in moderation, just as in our own personal diets, an awareness of what we are using as a training reward can effect more than just the training session.

Fruits	Calories		Cholesterol (mg)		Total Fat (g)		Sodium (mg)		Total Carbohydrate (g)		Sugars (g)		Fiber (g)		Protein (g)		Vitamin A (IU)		Vitamin C (mg)		Calcium (mg)		Iron (mg)		
	Calories	% Daily Value	Cholesterol	% Daily Value	Total Fat	% Daily Value	Sodium	% Daily Value	Total Carbohydrate	% Daily Value	Sugars	% Daily Value	Fiber	% Daily Value	Protein	% Daily Value	Vitamin A	% Daily Value	Vitamin C	% Daily Value	Calcium	% Daily Value	Iron	% Daily Value	
Fruits Serving Size (approx weight/measure weight)																									
Apple Serving Size (100g)	130	0	0	0	0	0	0	0	26g	54	5	0	0	0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Avocado Serving Size (100g)	30	35	15	30	1	2	140	28	7	11	28	25g	1g	2%	8%	4%	8%	8%	2%	2%	2%	2%	2%	2%	2%
Banana Serving Size (100g)	110	0	0	0	0	0	0	0	28g	28	3	19g	1g	2%	15%	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Cantaloupe Serving Size (100g)	50	0	0	0	0	0	0	0	16g	12	1	11g	1g	130%	80%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Grapefruit Serving Size (100g)	60	0	0	0	0	0	0	0	16g	15	2	11g	1g	33%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Grape Serving Size (100g)	90	0	0	0	15	24	23	1	28g	28	1	28g	8g	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Honeydew Melon Serving Size (100g)	50	0	0	0	0	0	0	0	11g	12	1	11g	1g	2%	40%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Kiwi Serving Size (100g)	90	10	1	2	0	45	28	7	13g	14	4	13g	1g	2%	240%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Lemon Serving Size (100g)	15	0	0	0	0	75	5	2	2g	8g	0	2g	0g	8%	40%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Lime Serving Size (100g)	20	0	0	0	0	75	2	2	2g	8g	0	2g	0g	8%	35%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Nectarine Serving Size (100g)	60	0	0.5	1	0	25	15	2	11g	1g	0	11g	1g	8%	15%	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Orange Serving Size (100g)	80	0	0	0	0	25	19	3	14g	1g	2	14g	1g	2%	130%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Peach Serving Size (100g)	60	0	0.5	1	0	25	15	2	13g	1g	0	13g	1g	4%	15%	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Pear Serving Size (100g)	100	0	0	0	0	15	28	6	16g	1g	0	16g	1g	8%	10%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Pineapple Serving Size (100g)	50	0	0	0	0	18	13	1	10g	1g	2	10g	1g	2%	50%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Plum Serving Size (100g)	70	0	0	0	0	23	19	2	16g	1g	0	16g	1g	8%	10%	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Strawberries Serving Size (100g)	50	0	0	0	0	17	11	2	8g	1g	0	8g	1g	8%	100%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Sweet Cherry Serving Size (100g)	100	0	0	0	0	25	28	1	16g	1g	2	16g	1g	2%	15%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Tangerine Serving Size (100g)	50	0	0	0	0	16	13	2	9g	1g	2	9g	1g	4%	45%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Watermelon Serving Size (100g)	80	0	0	0	0	27	21	1	28g	1g	0	28g	1g	30%	25%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%



IRKA Fundraising, Lara Metrione

Thank you so much to all those who supported the IRKA calendar! This has been another successful year, and we will be able to contribute \$12,087.45 to IRF in support of Javan rhino conservation.

It is not time to relax on our laurels just yet, though. It is a very important goal for our organization to be able to provide support for keepers seeking professional development opportunities. We have been very fortunate this year to provide 20 travel scholarships to the Workshop in Chester, England! To ensure that we are able to provide financial awards for future conferences and for the Keeper Development Program, we must start fundraising for IRKA again now.

We realize that between fundraising for your Zoo, fundraising for Bowling for Rhinos, and fundraising for IRF through the calendar and Cinco de Rhino, many of you are literally raising money in support of rhinos year-round. Please, please keep up the excellent work! For those of you who are not already heavily involved in one or more of these activities, won't you please consider organizing a World Rhino Day event on or around September 22 to raise money for IRKA? IRKA is a grass-roots organization, and the participation of our members in activities, including fundraising, is essential to our success. At the end of this call to action is a list of some ideas for World Rhino Day activities. It definitely is not too early to start planning! For those of you who have organized World Rhino Day activities in support of IRKA over the last couple of years, we cannot thank you enough for your efforts and hope you will continue to help us. Please let Lara Metrione know if you plan to host a World Rhino Day event in 2015 (lara.metrione@sezarc.com).