

Diet impacts fluorescent imaging

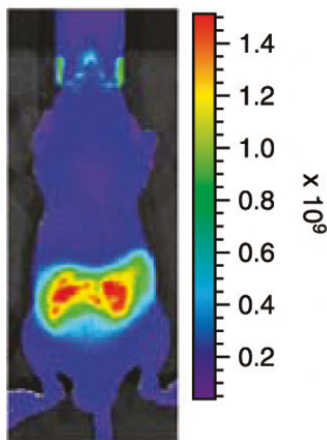
DIETS WITHOUT ALFALFA MEAL GREATLY IMPROVE IMAGING CLARITY

Optical imaging studies in live rodents with fluorescent reporters are used to monitor and assess disease in many therapeutic areas. Dietary ingredients such as alfalfa meal result in autofluorescence in the abdominal region due to the chlorophyll, thereby creating background signal.

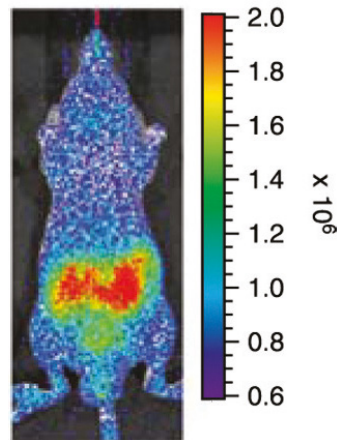
ALFALFA-FREE DIETS MINIMIZE AUTOFLUORESCENCE AND IMPROVE IMAGING CLARITY

Alfalfa-containing diet

Far-red filter set



NIR filter set



Fluorescent images for the ventral side of a control nu/nu male mouse, showing autofluorescence for the far-red and near-infrared (NIR) filter sets. The images were taken after the animal was fed for a week with alfalfa-containing rodent diet (on left) and purified rodent diet (on right). Units are photons /se/CM2/sr; $\times 10^9$ for far-red and $\times 10^6$ for NIR.

Alfalfa-free diet options

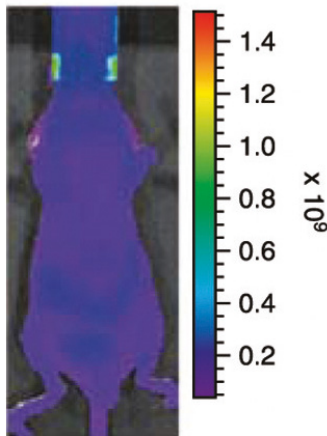
TEKLAD GLOBAL RODENT DIETS

2014	Maintenance	Pelleted
2016	Growth and maintenance	Pelleted
2018	General purpose, breeder	Pelleted
2019	Breeder diet, higher fat	Extruded
2020X	General purpose, breeder	Extruded

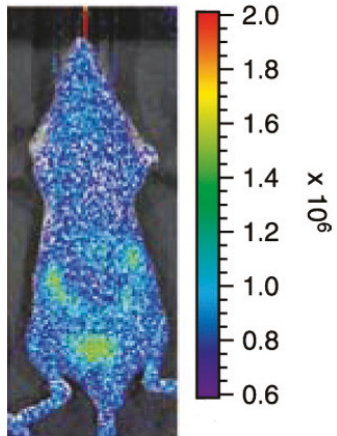
These diets are available in certified, autoclavable and irradiated form.

Purified diet (Alfalfa-free)

Far-red filter set



NIR filter set

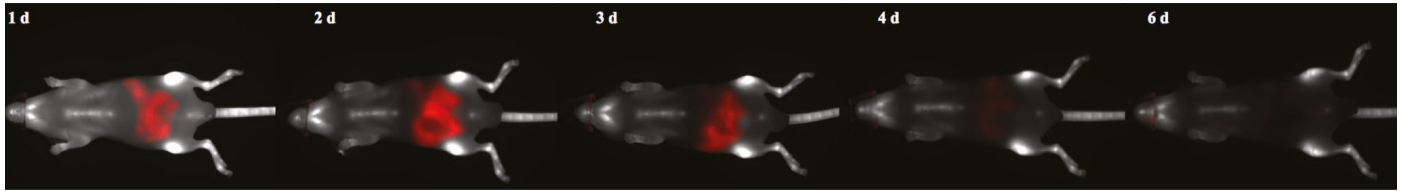


PURIFIED DIETS

Most purified diets will be suitable. Commonly used ones are versions of AIN diets, such as:

- TD.94045, AIN-93G
- TD.97184, AIN-93G, suitable for irradiation

OPTIMAL SIGNAL CLEARANCE MAY REQUIRE WASHOUT OF UP TO FOUR DAYS

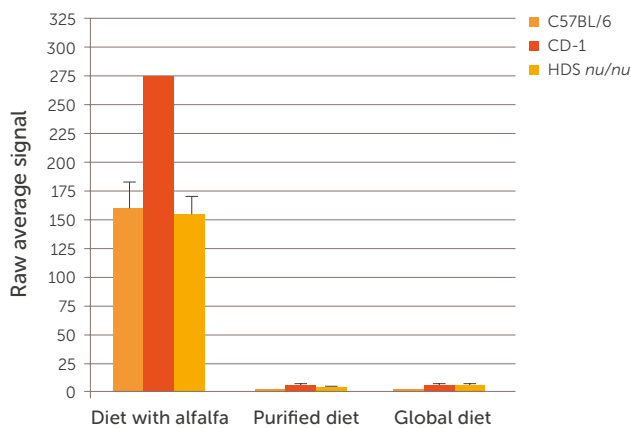


Courtesy of LI-COR

Signal clearance from a nude mouse is visualized with the Pearl™ Imager (LI-COR Biosciences) in a series of images captured over several days. A mouse on Teklad 7012, exhibiting a high level of autofluorescence in the 700 nm channel (red), was switched to a purified diet on day one.

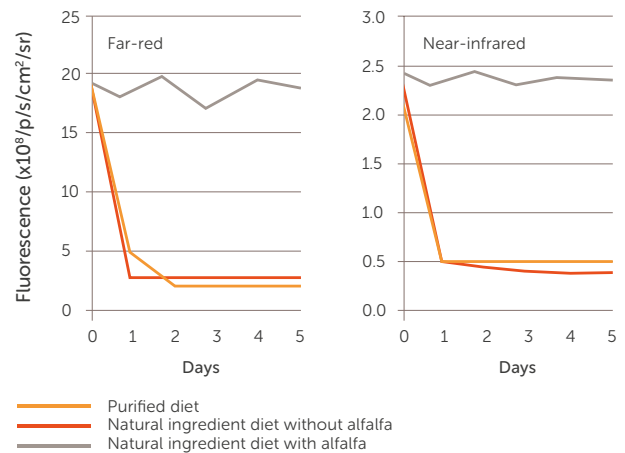
GLOBAL AND PURIFIED DIETS BOTH REDUCE ABDOMINAL AUTOFLUORESCENCE

Signal clearance improves to a similar extent



Adapted from MacLaurin, et al., 2006

Reduction happens within days



Adapted from Innuo, et al., 2006

ADVANTAGES

Teklad Global Rodent Diets

- Greatly reduce autofluorescence
- Eliminate disruption in feeding regimen mid study
- Less expensive than purified diets
- Readily available globally

Soybean meal-free options available.



Pelleted (2016)



Extruded (2020SX)

Purified diets

- Minimize autofluorescence; important when there is a low signal level



Purified (AIN-93G)

References

1. Troy T, Jekic-McMullen D, Sambucetti L, Rice B. 2004. Quantitative comparison of the sensitivity of detection of fluorescent and bioluminescent reporters in animal models. *Mol Imaging* 3:9-23.
2. Inoue Y, Izawa K, Kiryu S, Tojo A, Ohtomo K. 2008. Diet and abdominal autofluorescence detected by *in vivo* fluorescence imaging of living mice. *Mol Imaging* 7:21-27.
3. MacLaurin SA, Bouchard M, Dwyer P, Levenson R, Mansfield J, Krucker T. 2006. Reduction of Skin and Food Autofluorescence in Different Mouse Strains through Diet Changes. *Poster, Society for Molecular Imaging, Annual Meeting, Hawaii.*
4. Bhaumik S, DePuy J, Klimash J. 2007. Strategies to minimize background autofluorescence in live mice during noninvasive fluorescence optical imaging. *Lab Anim (NY)* 36:40-43.
5. LI-COR Biosciences. *In Vivo Animal Imaging Diet Considerations.* 2008. *Application Note for Pearl Imager.*