

# PECAN SHELL

Unveiling the Science Hidden in Nature

## **FDA GRAS**

#GRN 000646 up to 10%  
in human foods

## **FEMA GRAS**

#4385 As a Natural Flavor Complex and Flavor  
carrier – human consumption

## **FDA - CVM**

has given a “letter of no object” for use of Pecan  
Shell fiber in all animal applications.

## **AAFCO**

listed a definition of ground pecan shell  
as an approved feed ingredient.

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## **TOXICITY PUBLICATION**

Safety studies conducted on pecan shell fiber,  
a food ingredient  
produced from ground pecan shells

Laurie Dolan, Ray Matulka, Jeffrey Worn, John Nizio Toxicology Reports

Volume 3, 2016, Pages 87-97

Link:

<https://www.sciencedirect.com/science/article/pii/S2214750015300883>

[pecanshellflour.com](http://pecanshellflour.com)

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## Unveiling the Science Hidden in Nature

### ORAC 5.0

(Oxygen Radical Absorption Capacity)

ORAC tests are an acknowledged method to quantify antioxidants contained in a material.

Testing was performed by Brunswick Labs to document the antioxidant content of pecan shell flour in a comprehensive test series called ORAC 5.0. This series consists of five types of assays that evaluate the antioxidant capacity against five primary reactive “oxygen radicals” found in humans: peroxy radical, hydroxyl radical, superoxide anion, singlet oxygen and peroxynitrite. Below is a comparison of our 2 products with freeze dried berry products:

	ANTIOXIDANT VALUE (μmole TE/g)					<b>ORAC 5.0</b>
	<u>ORAC</u>	<u>HORAC</u>	<u>NORAC</u>	<u>SORAC</u>	<u>SOAC</u>	
Pecan Shell flour - RS	307	1494	<b>57</b>	<b>6308</b>	317	<b>8483</b>
Pecan Shell flour	177	696	<b>55</b>	<b>4088</b>	90	<b>5106</b>
Strawberries FD	430	1014	<b>21</b>	<b>2500</b>	383	<b>4348</b>
Bluberries FD	470	1230	<b>35</b>	<b>867</b>	539	<b>3141</b>
Cranberries FD	297	669	<b>37</b>	<b>1006</b>	291	<b>2300</b>
Raspberries FD	389	600	<b>10</b>	<b>548</b>	395	<b>1942</b>
Note: FD = Freeze dried						

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### Cellular Antioxidant Assay (CAA)

As an additional step beyond the chemical analysis provided by ORAC 5.0, a CAA was performed by Brunswick labs and is a preclinical measure of bioavailability of a material that describes the efficiency of the material to be absorbed by human cells, as well as its antioxidation effectiveness within the cells. The CAA uses a solution that mimics human digestive fluids to extract antioxidants from an ingredient. This extract is then contacted with human liver cells to see if absorption will occur. Finally, the liver cells are reacted with a strong oxidant (peroxide) to see if any protection occurs from the antioxidant extract.

Table shows the high efficiency from pecan shell flour of antioxidant extraction and transfer on to human liver cells.

<u>Ingredient</u>	<u>Lab</u> <u>maximum</u> <u>Extractable</u>	<u>CAA</u>	
		<u>Benefit to</u> <u>Human liver</u> <u>µmole QE/g</u>	<u>Efficiency</u> <u>% absorption</u>
Pecan Shell Flour - RS	307	303	98.6
Bluberries FD	470	222	47.2
Blackberries FD	330	209	63.3
Pecan Shell Flour	177	172	97.1
Cranberries FD	297	127	42.7

note: FD = freeze dried

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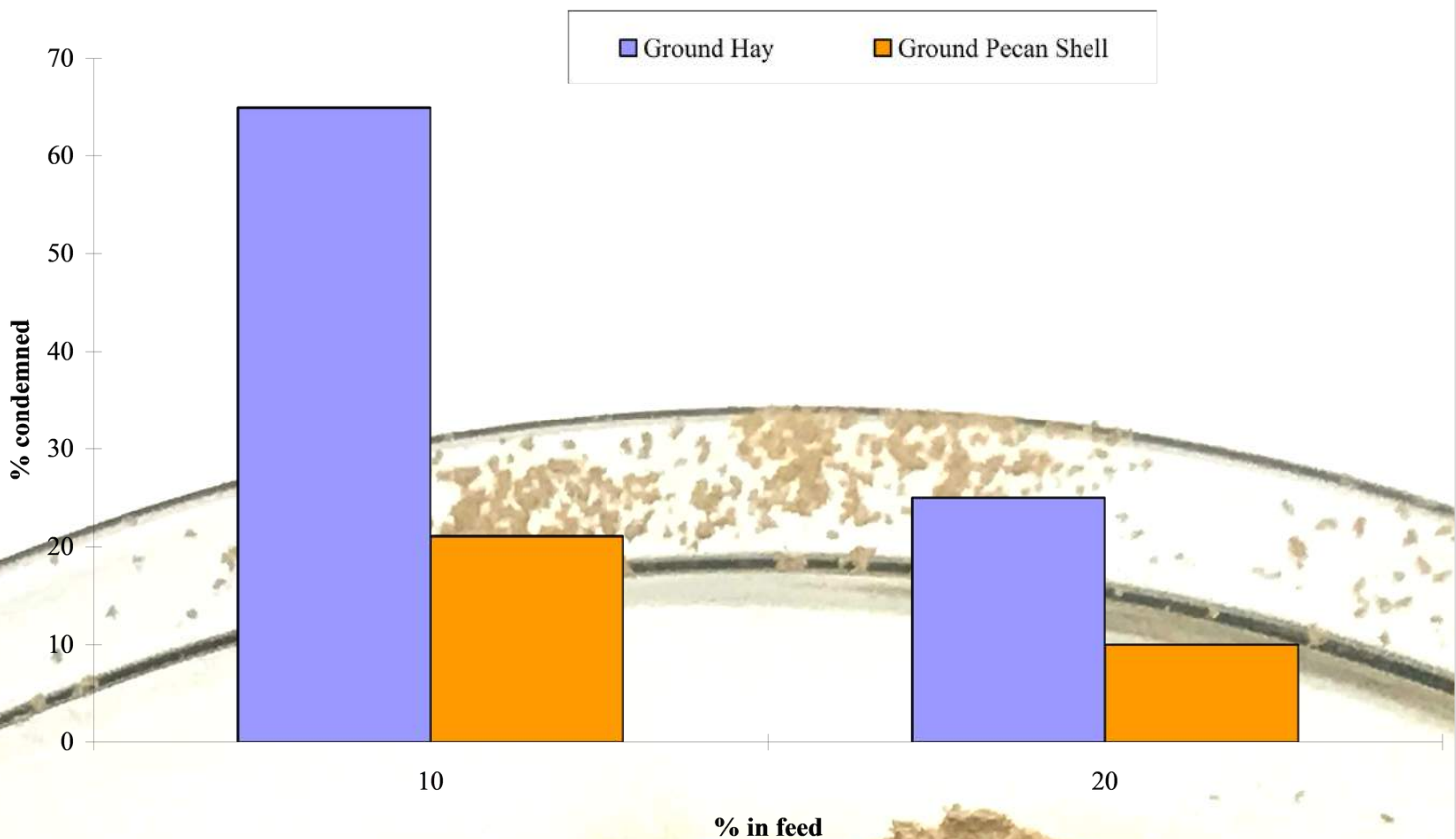
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### Long Term Cattle Feed Study

Benefits of cattle fed with either Ground Hay or Ground Pecan Shell (140+ day feeding trial)

\* The results show a tremendous reduction in abscess growth on the livers of cattle fed with pecan shell.

#### Percent of cow livers condemned due to abscess



\* **Cullison et.al 1973** Pecan Shells as a Roughage in Steer Rations and use of Rib Cut Density in Estimating Energy Gain. J. Animal Science 37:858-862.