

- MAY 15, 2018 -

The Nutritional Benefits of Pasture-Raised Animals



- PRESENTED BY -

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- HOSTED BY -



Food Animal Concerns Trust

Introductions



Food Animal Concerns Trust (FACT) is a national nonprofit organization that advocates for the safe and humane production of meat, milk, and eggs.



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FACT's services for livestock and poultry farmers include:

- **Fund-a-Farmer Grants**
- **Conference scholarships**
- **Free webinars**
- **Humane Farming Mentorship Program**

The Nutritional Benefits of Pasture-Raised Animals

Collette Lentz, M.S. Applied Nutrition
May 15th, 2018



Pictures from Food Animal Concerns Trust Fund-a-Farmer Grant recipients

AGENDA

Overview of Presentation:

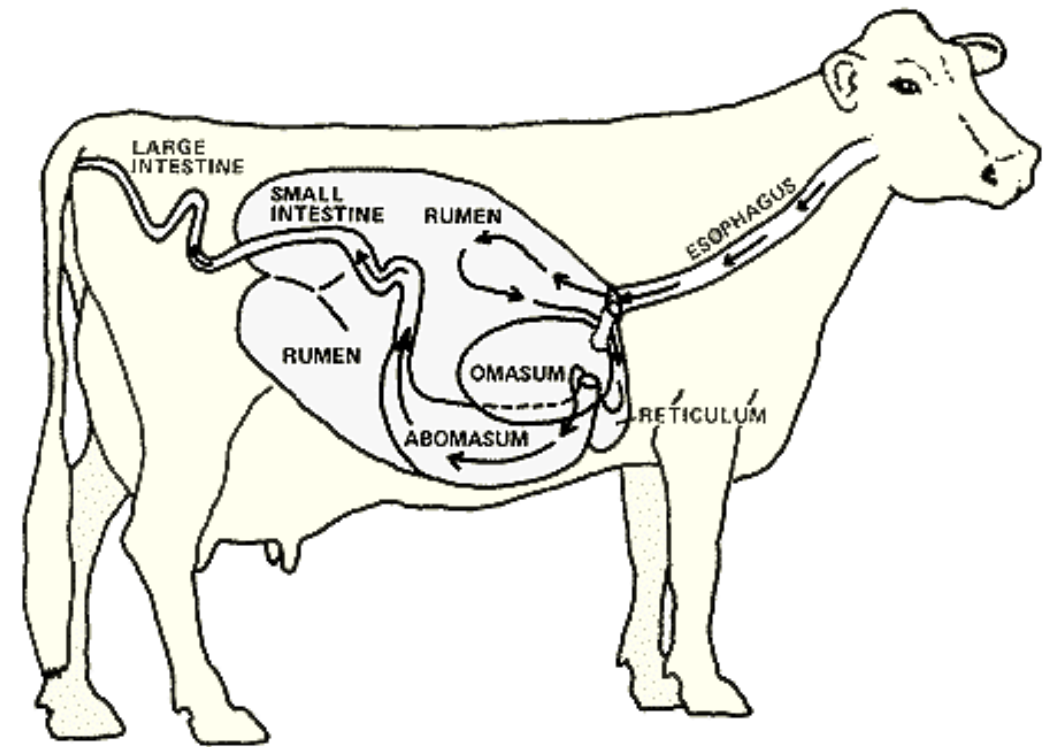
- Introduction
- Background on the differences between ruminants and non-ruminants
- Pasture-raised label definition
- Desired nutrient content in animal-derived foods
- Nutritional advantages of pasture-raised vs. conventionally-raised animals
- The connection between diet and human health

Presentation Background:

- This presentation dives into humane farming in the context of the broader “good food” movement, a movement that opened up conversations about what and how Americans eat. This “good food” movement supports local, organic, and humanely-raised family farmed foods.^{1,2}
- The association between humane animal production and human nutrition was evaluated. A literature review was conducted (studies mainly from 2000s but studies ranged from 1984 to 2017) and the findings are summarized in this presentation.
 - Five main food-producing animals were assessed: beef cattle raised for meat/beef, dairy cows raised for dairy products such as milk, broiler chickens raised for meat, laying hens raised for eggs, and swine/pigs raised for meat/pork.
 - Areas included in research: the nutritional composition differences for animals raised on different feeds (e.g. 100% grass-fed vs. grain-fed beef and dairy), and the nutritional differences between organic and conventional production of the five main animals.
- The information provided in this presentation is based on the current available literature, and is meant to inform and empower individuals with a better understanding of the nutritional benefits of pasture-raised animals. The superior nutritional content of pastured animal products provides a new perspective and justification for supporting humane farming.

Ruminant Animals:

- Beef cattle raised for meat/beef and dairy cows raised for dairy products such as milk are examples of ruminant animals.¹ Ruminants have a stomach with four compartments, in which the largest of the four compartments is called the rumen.² Cows are known natural herbivores (only eats plants).³
- The microorganisms in the rumen have a large and significant impact on the types of fatty acids leaving the rumen for absorption in the small intestine.^{1,4,5}
- A great portion of unsaturated fatty acids (UFAs) in the ruminant's diet is converted to saturated fatty acids or UFAs with less double bonds such as monounsaturated fatty acids (MUFAs).⁵⁻⁷ At the same time, a portion of the UFAs still avoid breakdown in the rumen and end up in the beef or dairy product that you eat/drink.⁵

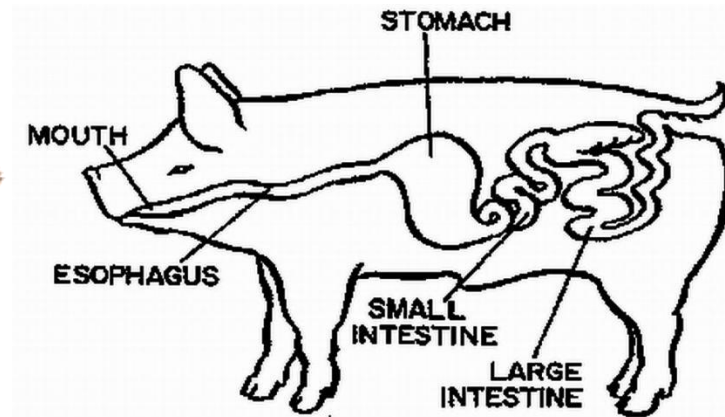
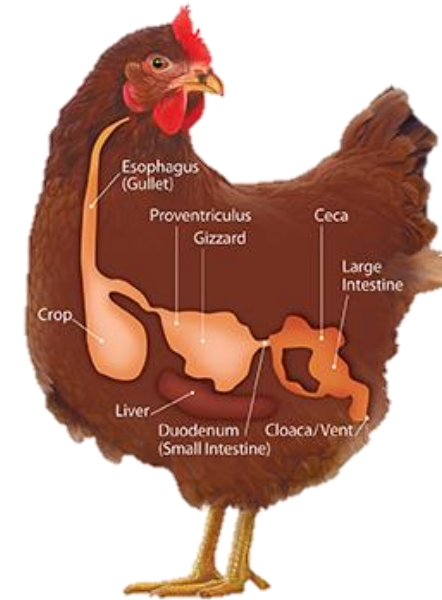


NON-RUMINANTS

DIETARY SOURCES FOR NON-RUMINANTS

Non-Ruminant Animals:

- Broiler chickens raised for meat, laying hens raised for egg production, and swine/pigs raised for pork are examples of non-ruminant animals.¹ Non-ruminants, or monogastric animals, have a single or simple stomach with one chamber.² Pigs and chickens are known natural omnivores (eat both plants and animals such as insects).³
- Dietary fatty acids are absorbed unchanged in the small intestine before incorporation into the tissue lipids (such as in the meat of an animal or in the egg produced from the chicken). Thus, dietary lipid sources have a more direct/predictable effect on pig and poultry products^{4,5}
- Overall, pigs and poultry have relatively simple digestive system and absorb fatty acids in more or less the same proportion as found in diet.⁴⁻⁷



PASTURE-RAISED

WHAT DOES “PASTURE-RAISED” MEAN?

Labeling Definitions:^{1,2}

- No common government standard to meet “pasture-raised” claim on a food label
 - There is currently no definition for “pasture” and no verification through on-farm inspections
- Dairy and eggs: The FDA has no common standard and does not require “pasture-raised” labeling to be verified (thus, claim is not meaningful)
- Meat and poultry: The USDA requires claim to be approved, and companies must explain and define the meaning of the claim
- Beef and dairy: “Pasture-raised” does NOT mean cows were 100% grass-fed. May be given supplemental grain in grazing season and winter months. (Look for third party verified labels or verified “grass-fed” claim instead)



Note: There are other independent, third parties that require access to pasture (i.e. where truly free-range chickens are raised outdoors on pasture). Many of these parties adhere to higher standards and employ a sustainable approach, such as the Animal Welfare Approved seal³



GUIDE TO FOOD LABELS: TRUST THESE LABELS

How Do You Know Which Food Labels to Trust?

- The following is a brief guide from Food Animal Concerns Trust (FACT) to help you make the most sustainable and humane choices possible at the grocery store. Overall, FACT recommends purchasing products that have third party verified labels.

FACT recommends the following labels for beef, dairy, chicken meat, eggs, and pork products:



American Grassfed Association (AGA)

Certification only for cows, sheep, goats, and bison.

Pasture raised and outdoor access.
No hormones.
No antibiotics.
Diet is 100% grass and forage.
Not confined to feedlots.



Animal Welfare Approved

Pasture raised and outdoor access.
No hormones.
Antibiotics only for sick animals.
No cages or crates.

Certified Grassfed by AWA

An optional additional accreditation for AWA farmers and ranchers to certify they are grass fed for grazing animals.



Global Animal Partnership (GAP)

Found only at Whole Foods Market, it can appear on individual packages of meat as well as at the meat counter.
No hormones.
No antibiotics.
No cages or crates.

FACT recommends levels 4, 5, and 5+:
Step 4 – Pasture raised.
Step 5 – Animal centered, physical alterations prohibited.
Step 5+ – Animals spend their entire lives on a single farm.



Humane Farm Animal Care

Outdoor access required for most animals.
No hormones.
No antibiotics.
No cages or crates.
Ensured the ability to engage in natural behaviors.



USDA Certified Organic
Recommended **with caveats** due to the highly variable way the standards are implemented.

- Hens are uncaged inside barns or houses, with outdoor access required.
- Dairy cows on pasture for at least 120 days a year.
- No hormones or antibiotics.
- Diet free from synthetic herbicides, pesticides, or fertilizers.

Inconsistent implementation of standards. For example, some producers may not provide birds meaningful access to the outdoors.



Certified Naturally Grown
Recommended **with caveats** as an alternative to USDA Organic. This label offers farmers lower certification fees and less paperwork compared to USDA Organic.

- Standards are very similar to USDA Organic with tighter requirements for access to pasture.
- No hormones or antibiotics.
- Diet free from synthetic herbicides, pesticides, or fertilizers.

Audits are done by other CNG farmers or volunteers, not a third-party inspector.

Improved Animal Feed for Organic Production of Animals:^{1,2}

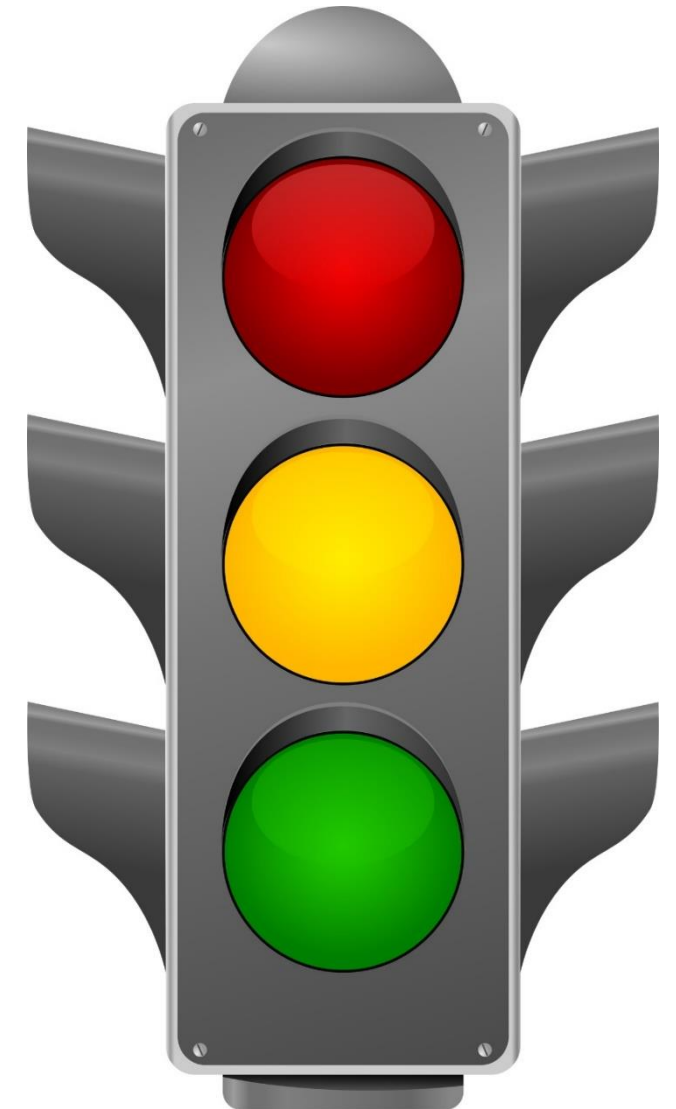
- Organic production of meat/dairy/poultry/eggs are required to have 100% organic feed and access to outdoors.
- Organic certification also has the following requirements:
 - Produced without genetic engineering
 - Managed organically from the last third of gestation (mammals) or second day of life (poultry)
 - Allowed year-round access to outdoors except under specific conditions (e.g. inclement weather)
 - Raised on certified organic land meeting all organic crop production standards
 - Raised per animal health and welfare standards
 - Fed 100% certified organic feed, except for trace minerals and vitamins used to meet animal's nutritional requirements
 - Managed without antibiotics, added growth hormones, mammalian or avian byproducts, or other prohibited feed ingredients.
- Additionally, ruminants (such as beef cattle and dairy cows) must have free access to certified organic pasture for entire grazing season of at least 120 days. Diets must contain at least 30% dry matter from certified organic pasture, where the rest of the diet must be from certified organic agricultural products.



FATS

DIETARY FATS

There are dietary fats present in beef, dairy, chicken, eggs, and pork products that we eat. These fats are important to human health. Which fats are considered “good” and which are considered “bad”?



“Fatty acids” and “fat” used interchangeably

✗ **BAD FAT: Limit artificial/industrial produced trans fats, such as partially hydrogenated oils found in margarine and frozen pizza²**

Natural trans fats such as conjugated linoleic acid (CLA) are found in dairy products and meats in small quantities, and do not need to be eliminated.

• **IN-BETWEEN FAT: Saturated fatty acids (SFAs) are common in meat and dairy products. It is generally recommended to limit intake and replace with unsaturated fats (good fats).^{2,3} (*debate around SFAs today)**

Some saturated fats like stearic acid actually have no negative impact, whereas others such as lauric and myristic have negative health consequences

✓ **GOOD FAT: Mainly from vegetables, nuts, seeds, and fish. There are two types: monounsaturated fatty acids (MUFAs) and polyunsaturated fatty acids (PUFAs). There are two main types of PUFAs: omega-3 (ω -3) fatty acids and omega-6 (ω -6) fatty acids.^{2,3}**

Good sources of MUFAs include olive oil, avocados, and nuts. Good sources of PUFAs include fatty fish, seeds, and nuts.

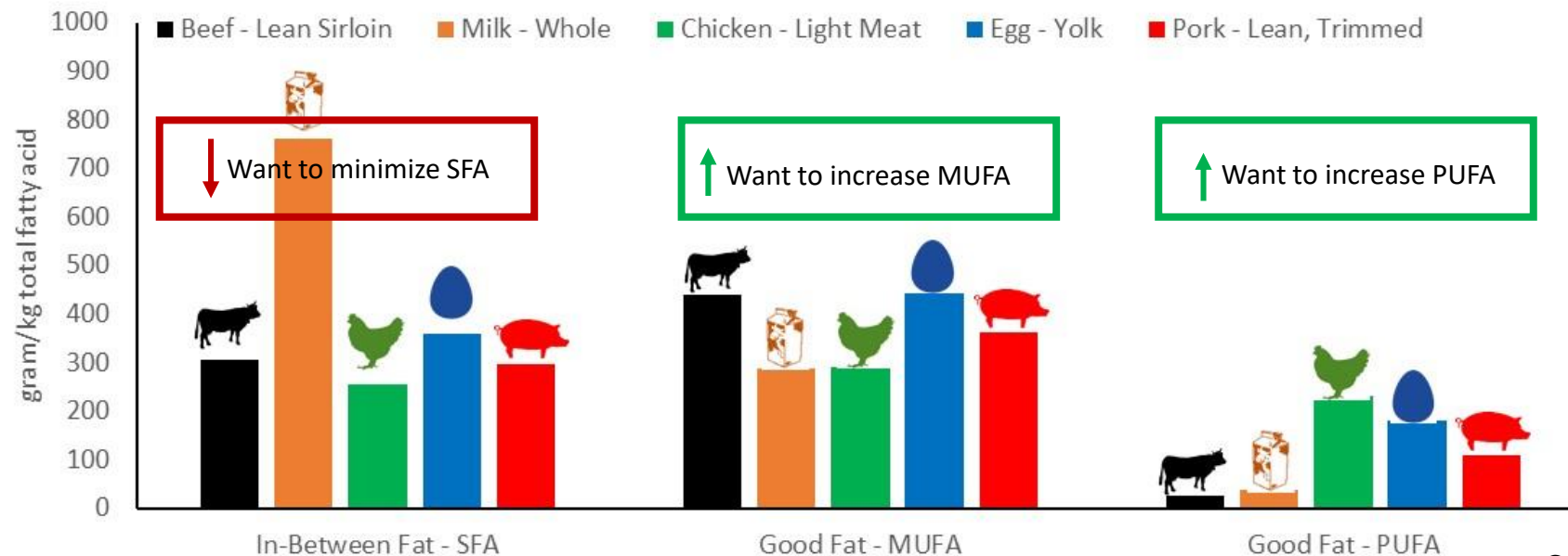
While both ω -3 and ω -6 are needed in the diet, a lower ratio of ω -6 to ω -3 is generally desirable.⁴⁻⁷

FAT BREAKDOWN

FAT COMPOSITION OF ANIMAL-DERIVED FOODS

Food-Producing Animals:

- Studies show that products from ruminants, such as beef and milk, have higher saturated fatty acids (SFAs) and monounsaturated fatty acids (MUFAs).^{1,2} Ruminants also have more natural trans fats, such as conjugated linoleic acid (CLA).¹
- Products from non-ruminants, such as chicken meat, eggs, and pork, have a higher amount of polyunsaturated fats (PUFAs).^{1,2}
- Trends shown below may differ slightly depending on the animal's genetics, gender, age, specific type of meat (i.e. muscles), and breed, along with management practices, geographical location, and feedstuffs



FAT BREAKDOWN

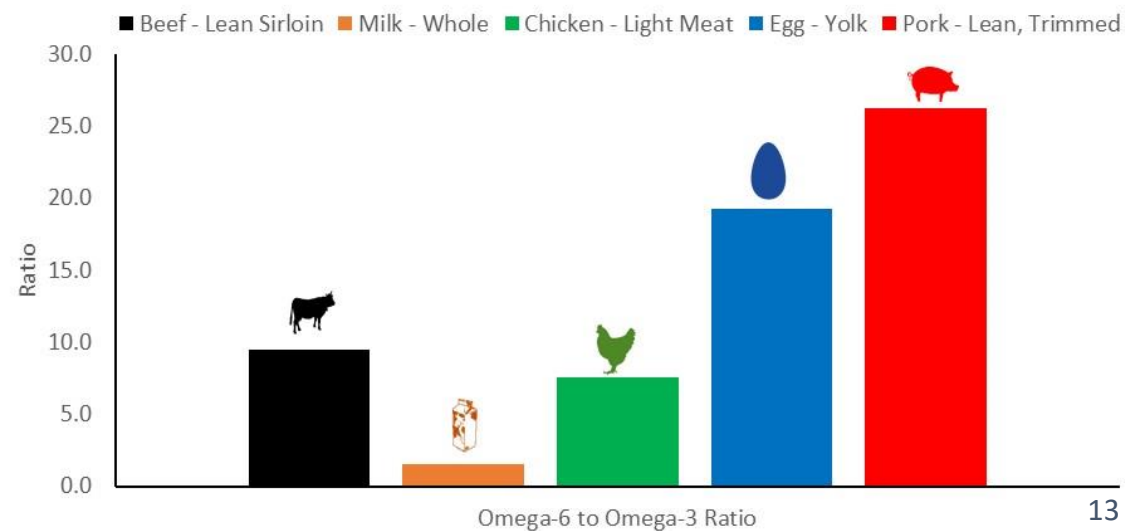
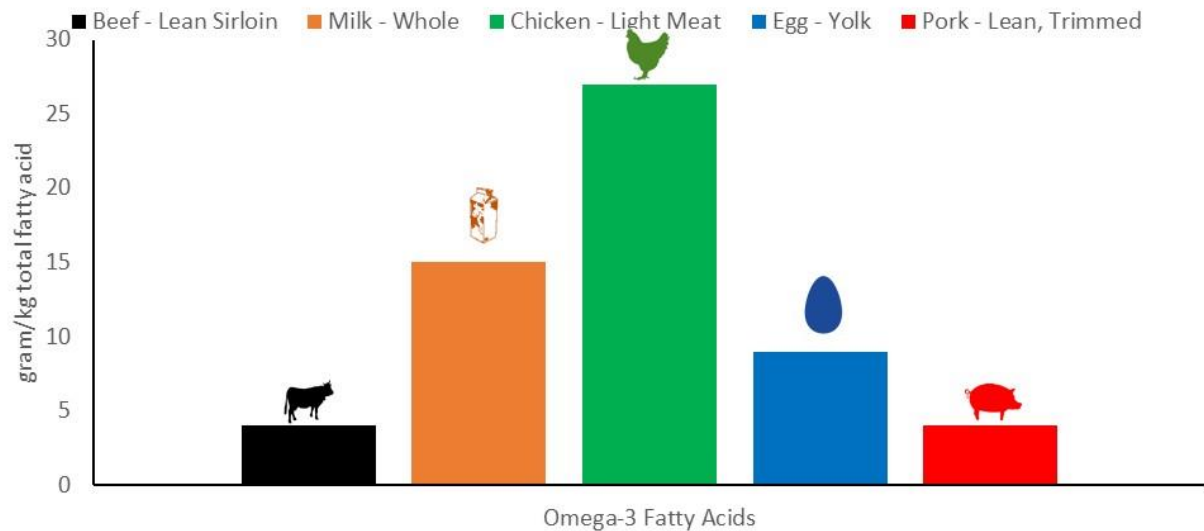
CONT'D - FAT COMPOSITION OF ANIMAL-DERIVED FOODS

Food-Producing Animals:^{1,2}

- Omega-3 fatty acids are a specific type of PUFA, a good fat. Omega-6 fatty acids are another type of PUFA. While both are generally considered healthy fats, studies show that a lower ratio of omega-6 to omega-3 in the diet is more desirable as it reduces risk of many chronic diseases. Increasing omega-3 content and/or potentially lowering omega-6 content would improve this ratio.

↑ Want to increase omega-3

↓ Want to reduce omega-6 to omega-3 ratio




...Continued from previous slide


Important Nutrients:

- In addition to fat, animal food products are good sources of a variety of other nutrients, such as vitamins (including vitamin E and vitamin D), minerals (such as iron),¹⁻⁴ and many other important nutrients, including antioxidants, carotenoids and polyphenols.^{2,4-7} Additionally, some natural trans-fats such as conjugated linoleic acid (CLA) have been shown to have health benefits.⁸
- The following is a list of general recommendations on the various nutrients to increase and decrease in one's diet, respectively. This holds true specifically for the animal food products discussed in this presentation, as well as other food items in one's diet.^{2,3,9,10}

Increase in Diet:

- 
- ✓ Increase healthy fats MUFA and PUFA, especially omega-3
 - ✓ Increase vitamins such as vitamin E and vitamin D
 - ✓ Increase minerals such as iron
 - ✓ Increase other important nutrients, such as antioxidants, carotenoids, and polyphenols

Decrease in Diet:

- 
- ✓ Lower omega-6 to omega-3 ratio is generally desired
 - ✓ Replace SFA with MUFA or PUFA
 - ✓ If total fat is too high in diet, lower fat content

Improving Nutrient Content:

- In some cases other foods may provide a better nutrient profile compared to beef, milk, chicken, eggs, or pork. For instance, salmon contains lower SFA and improved PUFA content compared to beef.^{1,2} Additionally, some fruits and vegetables may contain a higher vitamin content. However, there are many reasons why these alternative food options are not chosen, including cost, food access and availability, and taste.^{1,3}
- It is important to realize that beef, milk, chicken, eggs, and pork provide value as versatile sources of nutrients. For example, simply advocating for the U.S. population to decrease beef and milk in order to lower SFA ignores the potential benefits of these foods.³
- Altering fatty acid composition along with other nutrients in animal food products will improve consumer's diets and maximize potential nutritional benefits. Meat, poultry, dairy, and eggs make up about 30% of the U.S. daily caloric intake, and over 40% of the U.S. fat intake.⁴ Thus, significant improvements can be made to improve the American diet and health by changing/improving these animal food products.

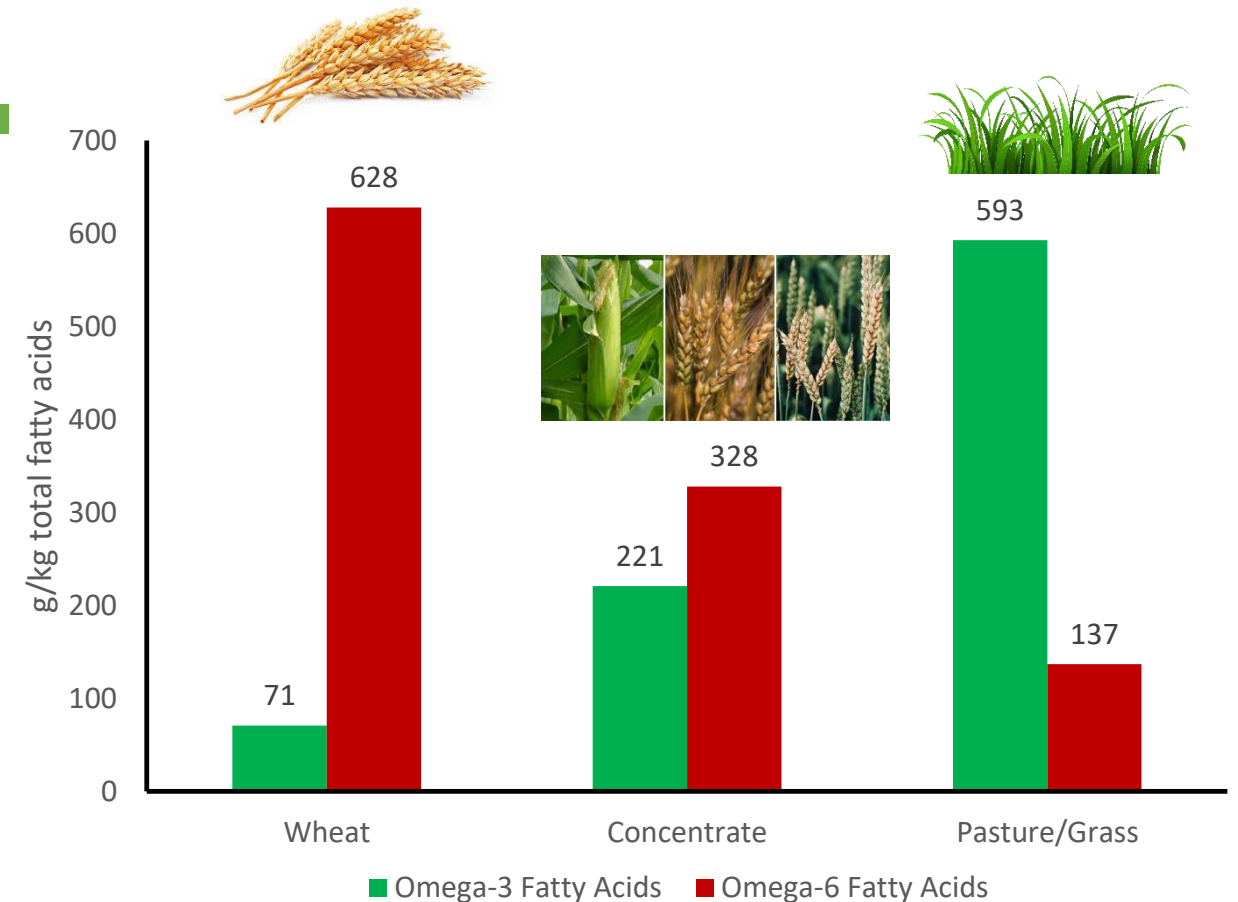
GOAL:
MAXIMIZE
NUTRITIONAL QUALITY
OF FOOD ANIMALS



CONT'D - IMPROVING NUTRIENT COMPOSITION OF ANIMAL-DERIVED FOODS

Improved Nutrient Content:

- Changing the diet of animals provides an effective method to improve the nutrient composition of the food product. Forages (edible parts of plants other than grain)¹ including pasture/grass are good sources of omega-3 PUFA whereas concentrates (mixtures of grains) and grains/cereals such as corn and wheat are mainly omega-6 PUFA with a small amount of omega-3.^{2,3} While there can be variation in nutritional quality of animal feed due to maturity and variety,^{2,3} the physiology of digestion and absorption for food-producing animals suggests that forages/pasture will lead to more nutritious food products.
- Although other factors such as breed and gender may change, they are likely to be of smaller value from a nutritional perspective.²



Pasture/grass is found to be the more nutritious animal feed as it has an increased amount of healthier fat and an improved omega-6 to omega-3 fat ratio

Improved Nutrient Content:

What is humane farming?

FACT believes there is a better, more humane way to raise farm animals. At minimum, farm animals deserve adequate space, access to the outdoors, clean water and air, the opportunity to express their natural behaviors, and healthful feed. Furthermore, FACT believes that living conditions should allow food animals to live and feed without aggression from other animals, including predators and members of their species.

"Humane farming" may seem like a vague or loosely defined term, but FACT maintains a set of strict beliefs and standards on how we define humane farming. Animals should receive antibiotics only for treatment of disease or illness, as prescribed by a veterinarian. Antibiotics, hormones, or other substances should not be used to promote faster animal growth. All animals should be fed a natural diet free of animal by-products and should have continuous access to clean and well-ventilated housing or shelter that protects them from weather extremes. Each species has its own particular needs when it comes to high standards of animal welfare:

<https://foodanimalconcernstrust.org/what-is-a-humane-farm>

- Food animals that are humanely raised are provided higher quality feed, such as inclusion of more pasture and less grain through access to the outdoors, compared to animals raised conventionally.¹⁻³ As discussed, this leads to improved nutrient composition of the food product
- Organic production of meat/dairy/poultry/eggs are required to have 100% organic feed and access to outdoors. Outdoor access generally provides increased dietary intake of forages/pasture. Some animals, such as beef cattle and dairy cows are required to have a certain percentage of diet come from pasture.^{4,5}
- Even for animals that are only fed 100% organic feed from cereal sources, such as corn and soybeans, studies have shown organic crop production to be more nutritious compared to conventionally grown crops, such as higher antioxidant content.⁶ Studies suggest that the type of animal feed (e.g. grain/concentrate vs. pasture/forage) is a major driver for the differences observed between conventional and organic production systems.⁶⁻⁹

Improved Animal Feed for Humanely Raised Animals:¹⁻³

- Food animals that are humanely raised are provided higher quality feed, such as inclusion of more pasture and less grain through access to the outdoors, compared to animals raised conventionally.¹⁻³

Ruminant Animals:

Conventionally Raised:



More Humanely Raised:



Beef Cattle

Dairy Cows

Non-Ruminant Animals:

Conventionally Raised:



More Humanely Raised:



Broiler Chickens (Meat)

Laying Hens (Eggs)

Swine/Pigs (Pork)

FOOD & HEALTH

WHY THE FOODS YOU EAT ARE IMPORTANT FOR YOUR HEALTH

HEART HEALTH

Eating more “good” fats and avoiding harmful “bad” fats has been shown to be necessary and beneficial for health. Omega-3 is a type of polyunsaturated fatty acid (PUFA), a good fat.⁴⁻⁷

Omega-3 fatty acids have been shown to promote heart health. They may prevent and even treat heart disease and stroke, along with reducing blood pressure, raising HDL (good cholesterol), and lowering triglycerides to prevent lethal heart rhythms from arising. Some studies link omega-3s to other health improvements, such as reducing risk of dementia.⁸⁻¹⁰

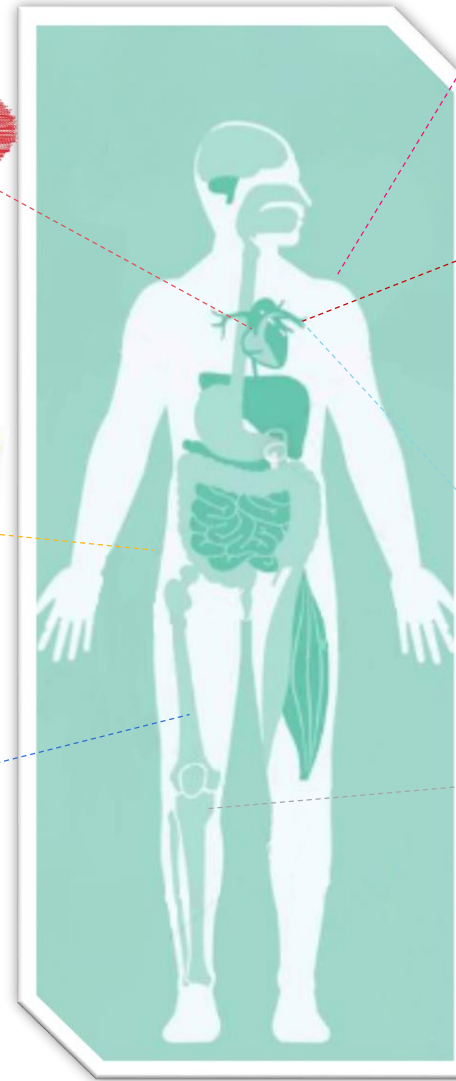


OBESITY/DISEASE

While both omega-3 (ω -3) and omega-6 (ω -6) fats are needed in the diet, a lower ratio of ω -6 to ω -3 is generally desirable. Studies show ω -3 fats tend to reduce inflammation while ω -6 fats tend to promote it. An increase in ω -6 to ω -3 ratio increases risk for obesity, cardiovascular disease, and other chronic diseases.¹³⁻¹⁵

BONE HEALTH

Vitamin D is needed for calcium and phosphorous metabolism, which helps build bones and keeps bones strong and healthy. Without sufficient vitamin D, bones can become brittle or thin. Vitamin D helps prevent osteomalacia, the softening of bones, and protect against osteoporosis in older adults. This vitamin also has other roles in the body, including reduction of inflammation.^{29,30} Vitamin D can be made in the body when there is sufficient exposure to sunlight, and it can be obtained through dietary sources (although few foods contain vitamin D).⁷



ANTI-CARCINOGENIC PROPERTIES

While artificial trans-fats found in products such as margarine and frozen pizza are known to be the worst fats found in the diet, natural trans fats such as conjugated linoleic acid (CLA) do not need to be eliminated.^{5,8} In fact, CLA has been shown to have health benefits, such as lowering the risk of various diseases, including type 2 diabetes and cancer.^{11,12}



BLOOD CHOLESTEROL

LDL cholesterol (“bad” cholesterol) is the main source of cholesterol buildup and blockage in arteries. HDL-cholesterol (“good” cholesterol) helps remove cholesterol from arteries. LDL is known to increase risk of heart disease/stroke whereas HDL helps protect you.¹⁶ Some saturated fats are known to raise cholesterol whereas others have no impact.¹⁷ It is generally recommended to replace saturated fats (SFAs) in diet with unsaturated fats (such as polyunsaturated fatty acids (PUFAs)) to reduce risk of cardiovascular disease events such as heart attacks and deaths.⁵



OXYGEN IN BLOOD

Iron is needed for blood production. Iron is found mainly in the red blood cells called hemoglobin that can be found in your blood and in muscle cells called myoglobin. Hemoglobin is needed for transferring oxygen in blood from the lungs to the other parts of the body. Without enough dietary iron, the body can't make enough healthy oxygen-carrying red blood cells and preventing iron deficiency anemia.^{27,28}



ANTIOXIDANTS/DISEASE

Antioxidants are substances that may prevent/delay some types of cell damage. The body relies primarily on antioxidants in the diet for its antioxidant needs.²⁰ Antioxidants may help prevent development of some chronic diseases.^{7,20-22} Some vitamins, such as vitamin E and β -carotene, are known antioxidants.⁷ Additionally, there are other nutrients that act as antioxidants, such as glutathione (a protein that is a known antioxidant in preventing DNA damage),^{23,24} lutein and zeaxanthin xanthophylls⁷ (type of antioxidant that may play a role in eye health),^{25,26} and polyphenols (secondary metabolites of plants that have antioxidant properties to potentially help prevent cardiovascular disease, cancers, and osteoporosis).^{27,28}



The nutrients in foods (or lack thereof) affect the body in numerous ways. There is a clear link between good nutrition and a healthy weight and reduced risk of chronic diseases, such as type 2 diabetes and heart disease.³¹

A HEALTHIER DIET = A HEALTHIER YOU

BEEF

NUTRIENTS IN BEEF

Beef Cattle

Conventionally Raised:

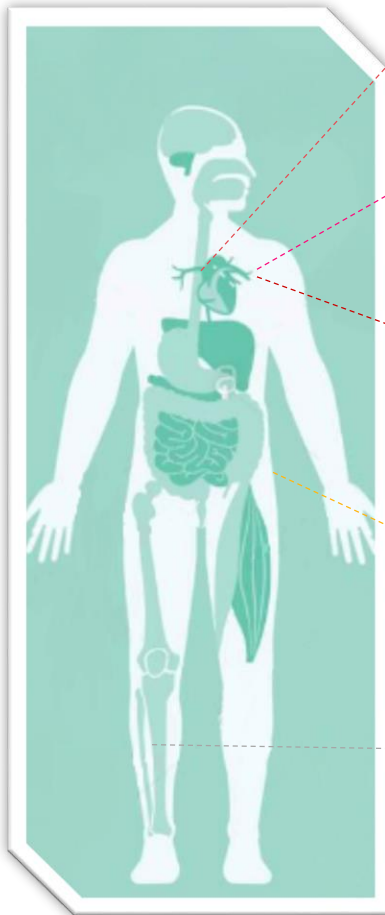


More Humanely Raised:



Beef cattle raised conventionally = typically fed a diet with grain/concentrate (e.g. corn, soybeans, etc) in an indoor setting. Beef cattle raised humanely = fed a natural diet consisting of more pasture/grass with access to outdoors.

The pasture/grass provides a more nutritious feed for the cattle. If the cattle are fed a higher quality diet, does this translate to a higher quality, more nutritious beef product that you can find in the grocery store? Let's see what the literature states...



Improved Nutritional Quality for Humanely Raised Beef Cattle & Impact on Human Health:

HEART HEALTH

Beef cattle raised more humanely have been found to have more healthy, omega-3 fats in the final beef product. These fats have been shown to potentially reduce heart disease.

ANTI-CARCINOGENIC PROPERTIES

Beef cattle raised more humanely have been found to have potentially more conjugated linoleic acid (CLA) and trans-vaccenic acid (TVA, another fat which is converted to CLA in the human body) in the final beef product. CLA has been shown to potentially lower cancer risk.

BLOOD CHOLESTEROL

Beef cattle raised more humanely have been found to have a potentially improved saturated fatty acid profile in the final beef product, in which there are less saturated fatty acids that raise blood cholesterol levels. A healthier/lower blood cholesterol has been shown to be beneficial in reducing risk of heart disease and stroke.

OBESITY/DISEASE

Beef cattle raised more humanely have been found to have a lower ω -6 to ω -3 ratio in the final beef product. A lower ratio has been shown to reduce the risk of obesity and other chronic diseases of high prevalence in the U.S.

ANTIOXIDANTS/DISEASE

Beef cattle raised more humanely have been found to have potentially more vitamin E and β -carotene and higher glutathione antioxidants in the final beef product. Antioxidants have been found to potentially reduce the risk of some chronic diseases, such as heart disease and cancer.



Humanely raised beef: Overall, the literature supports that beef cattle raised humanely with a diet that consists of more pasture/grass results in an improved nutrient quality of the beef product.¹⁻⁵ When beef cattle's diet is switched from grain to grass, positive nutrient changes in the beef product can occur in just 30-60 days.⁶⁻⁹

What about organic beef?: Organic production of beef requires the diet to be 100% organic with some portion of the diet including pasture. Studies show that organic beef is more nutritious than conventional beef, primarily due to the improved quality of the diet fed to the cattle (e.g. more pasture instead of grain).¹⁰

BEEF

PRACTICAL IMPLICATIONS

Comparing Omega-3 Levels in Beef:

100g (about 3.5 oz) ribeye steak – Lean meat



From grain-fed beef:^{1,2}

- ✗ 32 mg of ω -3 fatty acids
- ✗ 9.9 ω -6 to ω -3 ratio



From grass-fed beef:^{1,2}

- ✓ 84mg of ω -3 fatty acids
Approx. 160% increase compared to grain-fed
- ✓ 1.7 ω -6 to ω -3 ratio
Approx. 80% reduction compared to grain-fed

****To reach the same amount of omega-3 fatty acids in grass-fed beef, one would need to eat 2.6x as much grain-fed beef****

DAIRY

NUTRIENTS IN DAIRY

Dairy Cows

Conventionally Raised:

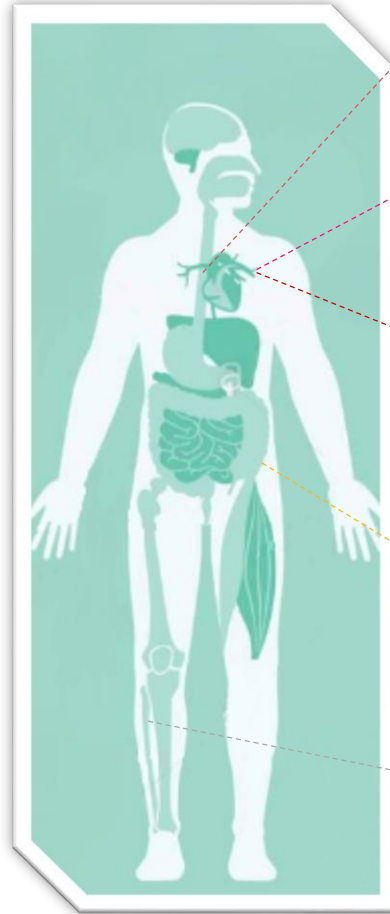


More Humanely Raised:



Dairy cows raised conventionally = typically fed a diet with more grain/concentrate (e.g. corn, soybeans, etc) in an indoor setting. Dairy cows raised humanely = fed a natural diet consisting of more pasture/grass/forage (edible parts of plants other than grain) with access to outdoors.

The pasture/grass/forage provides a more nutritious feed for the cows. If the cows are fed a higher quality diet, does this translate to a higher quality, more nutritious dairy product that you can find in the grocery store? Let's see what the literature states...



Improved Nutritional Quality for Humanely Raised Dairy Cows & Impact on Human Health:

HEART HEALTH

Dairy cows raised more humanely have been found to have more healthy, omega-3 fats in the final dairy product. These fats have been shown to potentially reduce heart disease.

ANTI-CARCINOGENIC PROPERTIES

Dairy cows raised more humanely have been found to have potentially more conjugated linoleic acid (CLA) and trans-vaccenic acid (TVA, another fat which is converted to CLA in the human body) in the final dairy product. CLA has been shown to potentially lower cancer risk.

BLOOD CHOLESTEROL

Dairy cows raised more humanely have been found to have potentially lower saturated fat content and a potentially improved saturated fatty acid profile in the final dairy product, in which there are less saturated fatty acids that raise blood cholesterol levels. A healthier/lower blood cholesterol has been shown to be beneficial in reducing risk of heart disease and stroke.

OBESITY/DISEASE

Dairy cows raised more humanely have been found to have a potentially lower ω -6 to ω -3 ratio in the final dairy product. A lower ratio has been shown to reduce the risk of obesity and other chronic diseases of high prevalence in the U.S.

ANTIOXIDANTS/DISEASE

Dairy cows raised more humanely have been found to have potentially more vitamin E and β -carotene antioxidants in the final dairy product. Antioxidants have been found to potentially reduce the risk of some chronic diseases, such as heart disease and cancer.



Humanely raised dairy: Overall, the literature supports that dairy cows raised humanely with a diet that consists of more pasture/forage/grass results in an improved nutrient quality of the dairy product.¹⁻⁶ When the dairy cow's diet is switched from grain to grass, positive nutrient changes in the dairy product can occur in just 1 month.^{7,8}

What about organic dairy?: Organic production of dairy requires the diet to be 100% organic with some portion of the diet including pasture. Studies show that organic dairy is more nutritious than conventional dairy, primarily due to the improved quality of the diet fed to the cows (e.g. more pasture instead of grain).^{9,10}

CHICKEN

Broiler Chickens (Meat)

Conventionally Raised:



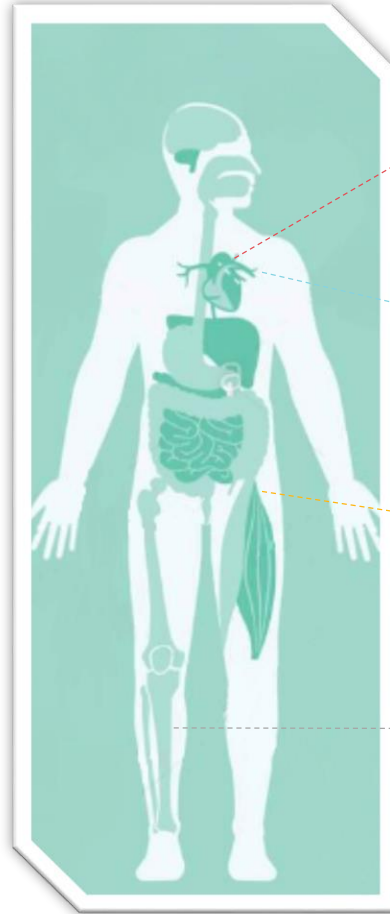
More Humanely Raised:



Broiler chickens raised conventionally = typically fed a diet with more grain/concentrate in an indoor setting. Broiler chickens raised humanely = fed a natural diet with access to outdoors (e.g. free-range, pasture-raised).

The pasture/grass/forage (edible parts of plants other than grain) provides a more nutritious feed for the chickens. If the chickens are fed a higher quality diet, does this translate to a higher quality, more nutritious meat product that you can find in the grocery store? Let's see what the literature states...

NUTRIENTS IN CHICKEN MEAT



Improved Nutritional Quality for Humanely Raised Broiler Chickens & Impact on Human Health:

HEART HEALTH

Broiler chickens raised more humanely have been found to have more healthy, omega-3 fats in the final chicken meat product. These fats have been shown to potentially reduce heart disease.



OXYGEN IN BLOOD

Broiler chickens raised more humanely have been found to have an increased iron content in the final chicken meat product. Iron is needed for making enough healthy oxygen-carrying red blood cells and preventing anemia.



OBESITY/DISEASE

Broiler chickens raised more humanely have been found to have a potentially lower ω -6 to ω -3 ratio in the final chicken meat product. A lower ratio has been shown to reduce the risk of obesity and other chronic diseases of high prevalence in the U.S.



ANTIOXIDANTS/DISEASE

Broiler chickens raised more humanely have been found to have potentially more vitamin E and β -carotene antioxidants in the final chicken meat product. Antioxidants have been found to potentially reduce the risk of some chronic diseases, such as heart disease and cancer.



Humanely raised broiler chickens: Overall, the literature supports that broiler chickens raised humanely with a diet that consists of more pasture/forage/grass results in an improved nutrient quality of the chicken meat product.¹⁻⁸



What about organic broiler chickens?: Organic production of broiler chickens requires the diet to be 100% organic with access to the outdoors (e.g. free-range). Studies show that organic chicken meat is more nutritious than conventional chicken meat, primarily due to the improved quality of the diet fed to the chickens (e.g. more pasture instead of grain).⁹

EGGS

Laying Hens (Eggs)

Conventionally Raised:

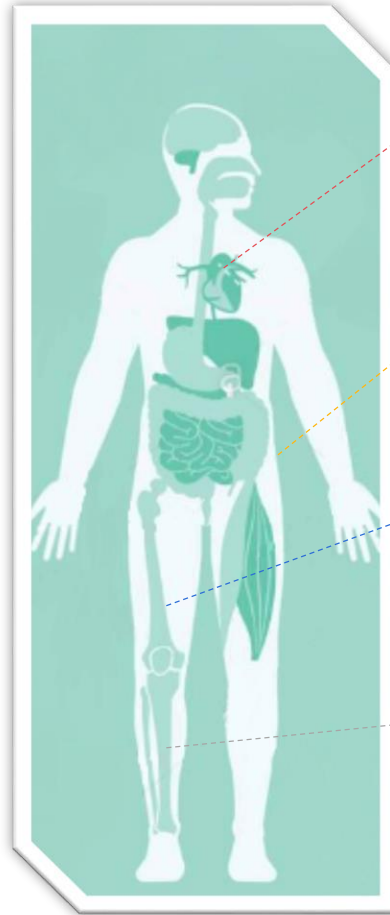
More Humanely Raised:



Laying hens raised conventionally = typically fed a diet with more grain/concentrate in an indoor setting. Laying hens raised humanely = fed a natural diet with access to outdoors (e.g. cage-free, free-range, pasture-raised).

The pasture/grass/forage (edible parts of plants other than grain) provides a more nutritious feed for the hens. If the hens are fed a higher quality diet, does this translate to a higher quality, more nutritious egg product that you can find in the grocery store? Let's see what the literature states...

NUTRIENTS IN EGGS



Improved Nutritional Quality for Humanely Raised Laying Hens & Impact on Human Health:

HEART HEALTH

Laying hens raised more humanely have been found to have more healthy, omega-3 fats in the final egg product. These fats have been shown to potentially reduce heart disease.



OBESITY/DISEASE

Laying hens raised more humanely have been found to have a lower ω -6 to ω -3 ratio in the final egg product. A lower ratio has been shown to reduce the risk of obesity and other chronic diseases of high prevalence in the U.S.



BONE HEALTH

Laying hens raised more humanely have been found to have an increased vitamin D content in the final egg product. Adequate vitamin D intake has been shown to lower the risk of bones becoming too brittle or thin and to help prevent osteoporosis.



ANTIOXIDANTS/DISEASE

Laying hens raised more humanely have been found to have more β -carotene, lutein, and zeaxanthin antioxidants, along with potentially more vitamin E antioxidant in the final egg product. Antioxidants have been found to potentially reduce the risk of some chronic diseases, such as heart disease and cancer.



Humanely raised laying hens: Overall, the literature supports that laying hens raised humanely with a diet that consists of more pasture/forage/grass results in an improved nutrient quality of the egg product.¹⁻⁹



What about organic laying hens?: Organic production of laying hens requires the diet to be 100% organic with access to the outdoors (e.g. free-range, cage-free). Studies show that organic eggs are more nutritious than conventional eggs, primarily due to the improved quality of the diet fed to the hens (e.g. more pasture instead of grain).¹⁰⁻¹⁵

PORK

Swine/Pigs (Pork)

Conventionally Raised:



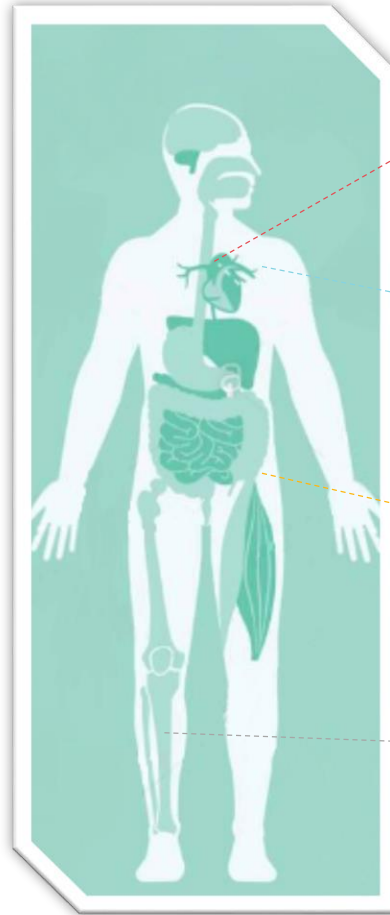
More Humanely Raised:



Swine raised conventionally = typically fed a diet with more grain/concentrate in an indoor setting. Swine raised humanely = fed a natural diet with access to outdoors (e.g. free-range, pasture-raised).

The pasture/grass/forage (edible parts of plants other than grain) provides a more nutritious feed for the swine. If swine are fed a higher quality diet, does this translate to a higher quality, more nutritious pork product that you can find in the grocery store? Let's see what the literature states...

NUTRIENTS IN PORK



Improved Nutritional Quality for Humanely Raised Swine/Pigs & Impact on Human Health:

HEART HEALTH

Swine raised more humanely have been found to have more healthy, omega-3 fats in the final pork product. These fats have been shown to potentially reduce heart disease.

OXYGEN IN BLOOD

Swine raised more humanely have been found to have a potentially increased amount of iron in the final pork product. Iron is needed for making enough healthy oxygen-carrying red blood cells and preventing anemia.

OBESITY/DISEASE

Swine raised more humanely have been found to have a lower ω -6 to ω -3 ratio in the final pork product. A lower ratio has been shown to reduce the risk of obesity and other chronic diseases of high prevalence in the U.S.

ANTIOXIDANTS/DISEASE

Swine raised more humanely have been found to have potentially more vitamin E and polyphenol antioxidants in the final pork product. Antioxidants have been found to potentially reduce the risk of some chronic diseases, such as heart disease and cancer.



Humanely raised swine: Overall, the literature supports that swine/pigs raised humanely with a diet that consists of more pasture/forage/grass results in an improved nutrient quality of the pork product.¹⁻⁷ When the pig's diet is switched from grain to grass, positive nutrient changes in the pork product can occur in just 40 days.^{8,9}



What about organic swine?: Organic production of swine requires the diet to be 100% organic with access to the outdoors (e.g. free-range). Studies show that organic pork is more nutritious than conventional pork, primarily due to the improved quality of the diet fed to the swine/pigs (e.g. more pasture instead of grain).¹⁰⁻¹³

Choose Humanely Raised Animals:

- Food animals that are humanely raised are provided higher quality feed, such as inclusion of more pasture and less grain through access to the outdoors, compared to animals raised conventionally.
- Studies show that higher quality feed in the diets of beef cattle, dairy cows, broiler chickens, laying hens, and swine result in a more nutritious beef, dairy, meat, egg, and pork product, respectively. Nutritional improvements in these food products are observed for 1) animals that are humanely produced with more pasture/forage in the feed and 2) in the organic production of these animals.
 - May be able to provide nutrient and/or health claims on product labels/advertisements. For example, grass-fed steak/ground beef may carry the following health claim: “Supportive but not conclusive research shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease”, or may inform consumer outside Nutrition Facts label that product contains certain amount of omega-3 fatty acids. Visit for more information: <https://www.fda.gov/Food/LabelingNutrition/ucm111447.htm>
- The dietary/nutritional benefits of meat, poultry, and eggs from animals raised humanely may result in improved human health.



Pictures from Food Animal Concerns Trust Fund-a-Farmer Grant recipients

Remember: Educated consumers to shop humanely at the grocery store! Humanely raised animals can provide nutritional benefits to you and your family!

Questions & Answers

Please type your Q's into the chat bar!



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