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| --- | --- |
|  | **Student response** |
| ***research skills*** | |
| Information source (correctly formatted reference) | Kris Gunnars, 2014, The Difference Between Grass-Fed and Grain-Fed Cows, 1-08-2014, <http://authoritynutrition.com/grass-fed-vs-grain-fed-beef/> |
| Relevant information highlighted in materials submitted |  |
| ***analysis*** | |
| **relevance:**  (the degree to which a source addresses the topic) | * This source is very relevant to the topic as it explains what grain and grass fed are and their differences. It explains the nutritional content of both grass and grain fed beef while comparing the two types against one another. The article explains the benefits of grass over grain fed beef both nutritionally and also touches on ethics. |
| **possibility of bias:**  (evidence of a prejudiced or partial viewpoint that influences interpretation of the material) | * This article focuses mainly on explaining the superiority of grass fed beef. It explains in more detail all the benefits of grass fed beef and doesn’t spend as much time explaining benefits of grain fed beef showing bias towards grass fed beef. It also shows bias towards grass fed beef at the start by referring to the feeding of grain fed cows as ‘unnatural’ and ’nasty’. * The article is very informative and gives nutritional positives for both types of beef however it does seem to give a slight bias towards grass fed beef. |
| **credibility:**  (the trustworthiness, i.e. credentials, education, experience, peer review etc. of the source | * The author of this article is a medical student with a focus course of study on health and nutrition. The author is also the founder of the organisation/website authority nutrition which is frequently updated. |
| **other factors:**  (ease of access, clarity of language and presentation, use of diagrams) | * The information was easy to access and used clear concise language, explaining technical nutritional concepts in simple language. The use of graphs, dot point format and small paragraphs made the article easy to read. |

Topic Question: Contemporary research indicates that grass fed beef is nutritionally superior to grain fed beef. Considering this, should grain fed beef be labelled on

packaging to allow consumers to make more informed decision?

**Source Analysis Work Sheets**

**Investigation:**

Logically selects and appropriately acknowledges information about nutrition and issues in nutrition from different sources.

|  |  |
| --- | --- |
|  | **Student response** |
| ***research skills*** | |
| Information source (correctly formatted reference) | Chris Kresser, 2013, Why Grass-Fed Trumps Grain-Fed, 1-08-2014,  <http://chriskresser.com/why-grass-fed-trumps-grain-fed> |
| Relevant information highlighted in materials submitted |  |
| ***analysis*** | |
| **relevance:**  (the degree to which a source addresses the topic) | * This article explains in more detail the nutritional content of grain and grass fed beef and contrasts these against one another. It also gives examples and explains why particular nutrients are important, their role in the body and how they can help to prevent diet related disorders. |
| **possibility of bias:**  (evidence of a prejudiced or partial viewpoint that influences interpretation of the material) | * This article from the start shows bias towards grass fed beef with the introduction stating “grass-fed meat is still superior to grain fed.” The article discusses only nutrients that have a higher abundance in grass fed beef and does not mention any nutrients that are more significant in grain fed beef that may be beneficial. |
| **credibility:**  (the trustworthiness, i.e. credentials, education, experience, peer review etc. of the source | * The article is credible as the author of the website and all articles within the site is a medicine practitioner with a passion for health. The site has a section explaining the author’s credibility including education and atonements. |
| **other factors:**  (ease of access, clarity of language and presentation, use of diagrams) | * This article used more technical nutritional terms which were sometimes hard to understand but overall was clear and well formatted. Sub topics in the article also make it easier to locate information quicker |

**Contemporary research indicates that grass fed beef is nutritionally superior to grain fed beef. Considering this, should grain fed beef be labelled on packaging to allow consumers to make more informed decision?**

**Analysis and Evaluation:**

Clearly and logically analyses data and their connections with concepts,

Research surrounding grass-fed beef has continually shown there is a significant nutritional difference when compared to grain-fed beef making it more beneficial for our consumptions and subsequent health. This includes its lower total fat content, high omega 3 and 6 levels and grass-fed beef’s increased amount of micronutrients. Packaging of beefs and labels of beef at butchers often have limited information as to whether the beef is grass or grain-fed. This can often cause consumers to be unaware of the nutritional differences between the two beef types or even that there are different types of beef. Due to this, consumers are more likely to make less informed decisions about the type of beef they are purchasing.

Most cows share similar lifestyles for the first 6 – 12 months of their life, feeding on milk and grass. After this time however, grain-fed cows are moved to feedlots. Often these are large feedlots known as Concentrated Animal Feeding Operations (CAFOs). Here the cows are rapidly fattened with a grain based food. Cows living here are often also given drugs and hormones to promote growth and antibiotics so they can withstand unsanitary feedlot conditions. Grass-fed cows continue a much more natural lifestyle and continue living in grasslands, grazing on pasture and growing at a much slower rate to the grain fed cows. (Kris Gunnars, 2014)

These differences continue when the beef reaches our plates. Grass-fed beef can be considered more nutrient-dense in comparison to energy dense grain-fed beef. Gram for gram, grass-fed beef contains a lower total fat and kilojoule content that grain-fed beef. (Kris Gunnars, 2014) Essential fatty acid omega 3 is also up to 5 times more abundant in grass-fed beef (Chris Kresser, 2013) This is beneficial to our health as omega 3 can slow to build-up of fatty deposits in the arteries, reducing the chance of atherosclerosis, blood clots and cardiovascular disease. It can also help counteract irregular heartbeat, lower triglyceride levels and is especially important for pregnant women as omega 3 helps with foetal brain growth and development. Levels of omega 6 have been found to be quite similar in both grain and grass-fed beef, however grass-fed beef has been found to contain twice as much conjugated linoleic acid (CLA), an altered form of omega 6. CLA is beneficial to our health as it has antioxidant properties and can lower cholesterol levels preventing heart disease, diabetes and cancer. (Chris Kresser, 2013)

**Knowledge and Understanding:**

Uses knowledge of nutrition perceptively and logically to understand and explain issues related to diet, lifestyle,

Micronutrients in crass-fed beef are also significantly more abundant than grain-fed beef, including levels of vitamins A and E. (Kris Gunnars, 2014) Vitamin A (beta carotene) is found in pigment plants, which is why there are higher levels found in grass-fed beef. The vitamin assists in night vision, cell reproduction and normal growth of bones and teeth. IT also helps protect eye tissues and surface skin tissues from infection. Vitamin E (tocopherols) is an important nutrient as it is an antioxidant. This is an important compound in beef as it prevents vitamin A and sensitive fat cells, omega 3 and 6 from undergoing oxidation. (Chris Kresser, 2013) Grain-fed beef has little nutritional superiority to grass-fed beef, however it does contain higher levels of B group vitamins and is also slightly higher in protein. (Kris Gunnars, 2014)

**Knowledge and Understanding:**

Demonstrates some depth and breadth of knowledge and understanding of a range of nutrition concepts.

and familiar contexts.

Although research shows that grain-fed beef is significantly less nutritious in comparison to grass-fed beef, there is little packaging or advertising on beef products that indicate any specific type. As a consequence of this, consumers are misled and disadvantaged in making educated decisions on the type of beef they would like to purchase. Most beef in supermarkets is grain-fed unless otherwise indicated, however this is not well communicated as see in many catalogues (see figures 1.1 and 1.2)

**Knowledge and Understanding:**

Uses a variety of formats to communicate knowledge and understanding of nutrition in different contexts coherently and highly effectively.

Figure 1.1 Figure 1.2

 

**Analysis and Evaluation:**

Clearly and logically analyses data and their connections with concepts, to formulate consistent conclusions

From this is can be seen that often beef is labelled simply as beef with no indication as the whether the meat is grain or grass-fed. Beef is often branded with a range of other labels such as ‘Australian Grown’ and ‘Meat standards Australia’ as seen in figures 1.1 and 1.2, however consumers are often unaware of what exactly each of these labels represents and whether this makes the beef better for them. This is not only troublesome for consumers looking to buy organic or more wholesome cuts of meat but can also be misleading for those with ethical concerns. CHOICE food policy advisor Angela McDougall explains that “When people order grain-fed steak, they may not realise that his means cattle are in a feedlot for 50 or 70- days on a protein-rich diet with the primary objective of fast weight gain.” Labelling for ethical reasons has already been implemented in other food products such as eggs which must indicate whether they are ‘free range’ or ‘caged’ eggs.

Labelling on grass-fed beef is much clearer and is generally labelled as either ‘grass-fed’ or ‘organic’ beef, however with a higher price to match. A comparison of both grain and grass-fed beef of the same cut showed that grain-fed beef cost approximately $1.70 per 100g with grass-fed beef costing over a dollar more at $2.80 per 100g (Coles, 2014). Socioeconomic factors apply here as while a dollar may not seem like mush to some consumers, many others may see the significant impact it is having on their budget if they are buying this type of beef frequently or in larger amount such as feeding a large family. Price difference between grain and grass-fed beef can also fluctuate due to seasonal changes. Grass-fed beef requires a higher water usage to maintain pasture which can significantly increase its price during drought seasons. (John Camerford, 2014) Taste and appearance of grain-fed beef is another factor that makes it more appealing to consumers with grass-fed beef often having less fat marbling through the meat cut and being darker in appearance. (Kim Cross, 2014) As for taste, grass-fed beef is generally tougher and has a more wholesome taste. Grain-fed beef is more tender due to its higher fat content and marbling however the taste of both meats is subject to consumer’s individual preference. (Aussie beef boy, 2012)

**Investigation:**

Logically selects and appropriately acknowledges information about nutrition and issues in nutrition from different sources.

**Application:**

Applies nutrition concepts and evidence from investigations to suggest solutions to complex problems and to promote good health in new and familiar contexts.

Grass-fed beef clearly has a number of nutritional contents that makes this type of beef more wholesome and beneficial to our health than its competitor grain-fed beef. Short term, the impact of choosing one type of beef over the other is minimal however long term effects of choosing grass-fed beef over grain-fed beef can be significant in benefitting the health of consumers. Not only does grass-fed beef make meeting daily intakes easier but also assists in preventing a range of dirt related disorders including atherosclerosis, obesity and cardiovascular disease. In order for consumers to make more informed decisions about their diet and what type of beef they are ingesting, clear labelling for both grass and grain-fed beef should be made mandatory. In addition to this, campaigns should be made so consumers can educate themselves about the difference between both beef types to allow them to make informed diet choices in relation to their health.

**Reference List:**

* Kris Gunnars, 2014, The Difference Between Grass-Fed and Grain-Fed Cows,

1-08-2014, <http://authoritynutrition.com/grass-fed-vs-grain-fed-beef/>

* Chris Kresser, 2013, Why Grass-Fed Trumps Grain-Fed, 1-08-2014,

<http://chriskresser.com/why-grass-fed-trumps-grain-fed>

* Kate Carey, 2013, CHOICE calls for more transparent beef labelling, 9-8-2014,

<http://ausfoodnews.com.au/2013/02/12/choice-calls-for-more-transparent-beef-labelling.html>

* Riverine Tender Cut Beef, 2011, Beef rump steak, 5-08-2014,

<http://riverinetendercutbeef.com.au/index.php?option=com_content&view=article&id=3&Itemid=5>

* John K, 2011, *Health Benefits of Grass fed beef*, 5-08-2014,

<http://tcpermaculture.blogspot.com.au/2011_07_01_archive.html>

* Kim Cross, http://www.cookinglight.com/2014,Grass-Fed Beef versus Grain-Fed Beef, 9-8-2014,

<http://www.cookinglight.com/cooking-101/resources/grass-fed-bef-grain-fed-beef>

* Aussie beef boy, 2012, Grass fed vs grain fed, 9-8-2-14,

<http://aussiebeefboy.com/2012/08/26/grass-fed-vs-grain-fed/>

* John Camerford, 2014, *Telling the Grass-Fed Beef Story*, 8-8-2014,

<http://extension.psu.edu/animals/beef/grass-fed-beef/articles/telling-the-grass-fed-beef-story>

* Coles,2014, This week catalogue, 20-8-2014,

<http://www.coles.com.au/catalogues-and-specials/this-week-catalogue>

* Woolworths, 2014 Woolworths catalogue speacials, 20-8-2014,

<http://www2.woolworthsonline.com.au/shop/seasonal/Woolworths-Catalogue-Specials?gclid=CjsKDwjwmuafBRCA7ef6zJXhdRIkAFH2medfI58La7TpWAxWBt99DJQ50TkJmLLs3spcisVUVeGgL98vD_BwE>

***Please note:***

*The student provided copies of the following internet articles:*

*Kris Gunnars, 2014, The Difference Between Grass-Fed and Grain-Fed Cows, accessed on 1 Aug. 2014*

*and included highlighted sections to show analysis. For copyright reasons, the article has been removed.*

*Chris Kresser, 2013, Why Grass-Fed Trumps Grain-Fed, accessed on 1 Aug. 2014*

*and included highlighted sections to show analysis. For copyright reasons, the article has been removed.*

**Additional Comment**

This is illustrative of an A- grade response.

Performance Standards for Stage 2 Nutrition

|  | Investigation | Analysis and Evaluation | Application | Knowledge and Understanding |
| --- | --- | --- | --- | --- |
| A | Designs logical, coherent, and detailed nutrition investigations.  Critically and logically selects and consistently and appropriately acknowledges information about nutrition and issues in nutrition from a range of sources.  Manipulates apparatus, equipment, and technological tools carefully and highly effectively to implement well-organised safe and ethical investigation procedures.  Obtains, records, and displays findings of investigations using appropriate conventions and formats accurately and highly effectively. | Critically and systematically analyses data and their connections with concepts, to formulate logical and perceptive conclusions and make relevant predictions.  Logically evaluates procedures and suggests a range of appropriate improvements. | Applies nutrition concepts and evidence from investigations to suggest solutions to complex problems and to promote good health in new and familiar contexts.  Uses appropriate nutrition terms and conventions highly effectively.  Demonstrates initiative in applying constructive and focused individual and collaborative work skills. | Consistently demonstrates a deep and broad knowledge and understanding of a range of nutrition concepts.  Uses knowledge of nutrition perceptively and logically to understand and explain issues related to diet, lifestyle, culture, and health.  Uses a variety of formats to communicate knowledge and understanding of nutrition in different contexts coherently and highly effectively. |
| B | Designs well-considered and clear nutrition investigations.  Logically selects and appropriately acknowledges information about nutrition and issues in nutrition from different sources.  Manipulates apparatus, equipment, and technological tools carefully and mostly effectively to implement organised safe and ethical investigation procedures.  Obtains, records, and displays findings of investigations using appropriate conventions and formats mostly accurately and effectively. | Clearly and logically analyses data and their connections with concepts, to formulate consistent conclusions and make mostly relevant predictions.  Evaluates procedures and suggests some appropriate improvements. | Applies nutrition concepts and evidence from investigations to suggest solutions to problems and to promote good health in new and familiar contexts.  Uses appropriate nutrition terms and conventions effectively.  Applies mostly constructive and focused individual and collaborative work skills. | Demonstrates some depth and breadth of knowledge and understanding of a range of nutrition concepts.  Uses knowledge of nutrition logically to understand and explain issues related to diet, lifestyle, culture, and health.  Uses a variety of formats to communicate knowledge and understanding of nutrition in different contexts coherently and effectively. |
| C | Designs considered and generally clear nutrition investigations.  Selects with some focus, and mostly appropriately acknowledges, information about nutrition and issues in nutrition.  Manipulates apparatus, equipment, and technological tools generally carefully and effectively to implement safe and ethical investigation procedures.  Obtains, records, and displays findings of investigations using generally appropriate conventions and formats with some errors but generally accurately and effectively. | Analyses data and their connections with concepts, to formulate generally appropriate conclusions and make simple predictions, with some relevance.  Evaluates some procedures in nutrition and suggests some improvements that are generally appropriate. | Applies nutrition concepts and evidence from investigations to suggest some solutions to basic problems and to promote good health in new or familiar contexts.  Uses generally appropriate nutrition terms and conventions with some general effectiveness.  Applies generally constructive individual and collaborative work skills. | Demonstrates knowledge and understanding of a general range of nutrition concepts.  Uses knowledge of nutrition with some logic to understand and explain one or more issues related to diet, lifestyle, culture, and health.  Uses different formats to communicate knowledge and understanding of nutrition in different contexts with some general effectiveness. |
| D | Prepares the outline of a nutrition investigation.  Selects and may partly acknowledge one or more sources of information about nutrition or an issue in nutrition.  Uses apparatus, equipment, and technological tools with inconsistent care and effectiveness and attempts to implement safe and ethical investigation procedures.  Obtains, records, and displays findings of investigations using conventions and formats inconsistently, with occasional accuracy and effectiveness. | Describes basic connections between some data and concepts, and attempts to formulate a conclusion and make a simple prediction that may be relevant  For some procedures, identifies improvements that may be made. | Applies some evidence to describe some basic problems and identify one or more simple solutions, or to promote good health, in familiar contexts.  Attempts to use some nutrition terms and conventions that may be appropriate.  Attempts individual work inconsistently, and contributes superficially to aspects of collaborative work. | Demonstrates some basic knowledge and partial understanding of nutrition concepts.  Identifies and explains some nutrition information that is relevant to one or more issues related to diet, lifestyle, culture, and health.  Communicates basic information about nutrition to others, using one or more formats. |
| E | Identifies a simple procedure for a nutrition investigation.  Identifies a source of information about nutrition or an issue in nutrition.  Attempts to use apparatus, equipment, and technological tools with limited effectiveness or attention to safe or ethical investigation procedures.  Attempts to record and display some descriptive information about an investigation, with limited accuracy or effectiveness. | Attempts to connect data with concepts, formulate a conclusion, and make a prediction.  Acknowledges the need for improvements in one or more procedures. | Identifies a basic problem and attempts to identify a solution or promote good health in a familiar context.  Uses some nutrition terms or conventions.  Shows emerging skills in individual and collaborative work. | Demonstrates some limited recognition and awareness of nutrition concepts.  Shows an emerging understanding of an issue related to diet, lifestyle, culture, and health.  Attempts to communicate information about nutrition. |