LINOLEIC ACID IN POULTRY FOODS

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WHAT IS LINOLEIC ACID?

• It is an unsaturated omega-6 fatty acid.
• It is essential for all mammals.
• It is a colorless liquid at room temperature.
• Chemically, linoleic acid is a carboxylic acid with an 18-carbon chain and two cis double bonds.
• It is found in the lipids of cell membrane.
• The word "linoleic" comes from the Greek word linon. Oleic means “Of relating to, or derived from oil of olive.”
BACKGROUND

WHY DID WE CHOOSE LINOLEIC ACID?

• Linoleic Acid has been proven to aid in the health of humans

• It is relatively cheap and inexpensive to make, especially if it is an additive ingredient in processing food.
What is Linoleic Acid?

- It is an Omega-6 fatty acid.
- The Omega-6 fatty acids are considered essential fatty acids:
  - They are necessary for human health, but the body can’t make them, you have to get them through food.
  - Most omega-6 fatty acids in the diet come from vegetable oils.
  - Chicken feed has additive linoleic acid in their foods, but it would be better to add more.

How do they aid in human health?

- Help stimulate skin and hair growth, maintain bone health, regulate metabolism, and maintain the reproductive system.
Why is the project important?

We eat chickens and what chickens eat matters to everyone.

“You are what you eat.”

Who in the community will it serve and how can they benefit from this information?

- Organic Physiological Chemistry Class at NWACC
- NWACC Community
MATERIALS & METHODS FOR STUDY

**MATERIALS:**
- Chicken house & environment
- 100 chickens
- 5 cages
- Chicken feed with linoleic acid

**METHODS:**
- 20 chickens in each cage
- Put 0.5 more Linoleic Acid than the cage before
- Track each cages results per week
- They can eat as much feed they want to grow
### DATA RESULTS FOR 3 WEEKS

#### Weight Gain with Additives

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<tr>
<th>Test</th>
<th>LBS</th>
<th>Linoleic Acid</th>
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</thead>
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<td>0.5</td>
</tr>
<tr>
<td>2</td>
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<td>1</td>
</tr>
<tr>
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<td>3.2</td>
<td>1.5</td>
</tr>
<tr>
<td>4</td>
<td>3.7</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>4.1</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Legend:**
- **LBS**
- **Linoleic Acid**
The more linoleic acid there was in the feed, the better it was for the chickens.

Cage 5 had the most Linoleic acid and they showed to be more active than cage 1. Cage 5 also seem to have better health recovery and performance.

The control group (cage 1) had chickens that died quickly due to not in taking enough linoleic acid.
RESOURCES

- Gamma-linolenic acid | University of Maryland Medical Center
  http://umm.edu/health/medical/altmed/supplement/gammalinolenic-acid#ixzz3E1O0MdC7
- http://www.news-medical.net/health/Linoleic-Acid-What-is-Linoleic-Acid.aspx