DATA FOR PUBLIC HEALTH DECISION MAKING

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INSTITUTO TECNOLÓGICO PESQUERO DEL PERÚ
PERU: FISHERY COUNTRY

- Coast line: 3,100 km
- Marine Domain: 900,000 Km²
- > 700 marine species

- Anchoveta
- Jack mackerel
- Caballa
- Pota
Government Fishery Institution:

INSTITUTO TECNOLÓGICO PESQUERO DEL PERÚ - ITP

ACCREDITED LABS - ITP

  - Sensory
  - Microbiology
  - Chemistry
  - Biotoxins

RESEARCH

TECHNOLOGY TRANSFER

HEALTH AUTHORITY
Accredited Methodologies at LABS - ITP

- FDA, USDA, UE, AOAC, BAM, ISO
  - 3 Sensory
  - 13 Microbiology*
  - 14 Chemistry (5 validated)*
    - Instrumental Methodologies:
  - LOD
  - LOQ

* Uncertainty (except for qualitative results)
Accredited Methodologies. Enough?

- Clients must be sure that accredited food tests are consistently monitored for levels of proficiency.

- Proficiency at performing test analysis must be demonstrated.
Uncertainty

- A procedure followed N times (highly unlikely results be always the same)
- Plotting data: a normal distribution curve.

A Target Value Is Necessary

Uncertainty: value of potential errors while performing a particular procedure
Why is a target needed?

- Average (mean value) from data obtained from replicates (same procedure).
- Proficiency
  - Spread of values
  - Based on N° results closest to the mean value.
- (Confidence Interval)
Data: Interpretation and Decisions

- Decisions are based on science
- Sampling
- Type of food
- Methodology

Do data detect and quantify food safety risks?

- Two scopes:
  - Quality
  - Food Safety *

* Not negotiable
Legislative Standards & Labs results

- If FSO = less than 2.5, but LR = 2.53
  $2.5 \pm ???????$

- Decision Criteria: Uncertainty
  - LQ?
  - LD?
    - Equipment
    - Methodology
  - Personnel
  - (antagonism/synergism, mattrix effect)
Uncertainty:
Total Volatile Bases (N) In Frozen Fish

Cause-Effect Diagram for Histamine Quantification

- Standard Calibration Curve
- Precisión
  - Sample Weight
  - Total Volume & Alicuote
  - Lecturas del área asociada al contenido de histamina.
-线性
  - Balance Calibration
  - Gross Weight
- Sample Mass
- Peso Tara
<table>
<thead>
<tr>
<th>CONCENTRATION</th>
<th>EXPANDED UNCERTAINTY</th>
<th>ACCEPTABLE CONCENTRATION RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>100g / 100g</td>
<td>4%</td>
<td>96 a 104 (g / 100g)</td>
</tr>
<tr>
<td>10g / 100g</td>
<td>5%</td>
<td>9.5 a 10.5 (g / 100g)</td>
</tr>
<tr>
<td>1g / 100g</td>
<td>8%</td>
<td>0.92 a 1.08 (g / 100g)</td>
</tr>
<tr>
<td>1g / Kg.</td>
<td>11%</td>
<td>0.89 a 1.11 (g / kg.)</td>
</tr>
<tr>
<td>100 mg / kg</td>
<td>16%</td>
<td>84 a 116 (mg / kg)</td>
</tr>
<tr>
<td>10 mg / kg</td>
<td>22%</td>
<td>7.8 a 12.2 (mg / kg)</td>
</tr>
<tr>
<td>1 mg / kg</td>
<td>32%</td>
<td>0.68 a 1.32 (mg / kg)</td>
</tr>
<tr>
<td>&lt; 100 ug / kg</td>
<td>44%</td>
<td>56 a 144 (ug / Kg.)</td>
</tr>
</tbody>
</table>
Lead: SCALLOPS *Argopecten purpuratus*

- **Permissible Level = 1.5 mg/kg**
- **LQ = 0.07 ppm**
- **LD = 0.03 ppm**
Cadmium: SCALLOPS *Argopecten purpuratus*

Permissible Level = 1 mg/kg

- **LQ = 0.01 ppm**
- **LD = 0.003 ppm**

**Cd mg/kg**

- **PIURA**
- **ANCASH**
- **ICA**

**2009**

**2010**
NUMBER OF UFC

ENVIRONMENT CONDITION DURING INCUBATION
- Temperature
- Time

SUB SAMPLE AND HOMOGENIZATION

INTRINSIC VARIABILITY
- Precision of Count colonies By Analyst

CONFIRMATION
- Precision of dispensed volumes

QUANTITATIVE MICROBIOLOGY: Cause – effect diagram methods

VOLUMETRY
- Serial Dilution

C = (CFU/g or mL)

Inoculated plate volume
Fishmeal:
- Fat: LABS-ITP-FQ-003-09 Method. 2009
- Protein: MÉTODO LABS-ITP-FQ-001-09.2009

Fish Sausage:
- Sodium Chloride; AOAC: 937.09. 2005 (18th edition)
- Fat: Método LABS-ITP, FQ-003-09.
- Protein: LABS-ITP-FQ-001-09. Method
- Ash: FAO, Food and Nutrition paper pp, 228 T 14/7. 2009
Fishoils
- Free fatty acids: AOAC: 940.28. 2005 (18th edition)
- Peroxide Value AOAC: 965.33- 2005 (18th edition)

Fresh or frozen: fish, seafood:
- Histamine: Método LABS-ITP-FQ-005-2009
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