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Flies on raw meat displayed on tables



### Processing into R-T-E

\*Using bare hands  
\*open space  
\*prone to contamination



News paper

Aluminum foil

### Packaging



Polythene

### Recommendations

- Routine inspection by experts to sanitize the production and sale of RTE-MPs
- Hazard Analysis and Critical Control Points (HACCP) should be established in the value chain production of RTE meat products to create a framework to protect public health.
- The use of hand sanitizer and hand gloves during production/processing advocated.
- Sensitization of risk associated with consumption of RTE-MPs infected products to both processors and consumers.
- The use of modern processing and packaging facilities to reduce the risk of infections.

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## Hazards Associated with Ready-to-Eat Meat Consumed in Kebbi State, Nigeria

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### What Are Ready to Eat Meats?

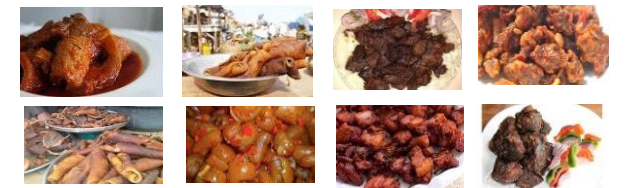
Ready-to-eat meat products (RTE-MPs) are intermediate moisture or dried meat products intended to be consumed without further heating or cooking.

### Common RTE-MPs in Kebbi State, Nigeria

*Balangu, Tsire, Guru, Kilishi, Dambun Nama, etc.*

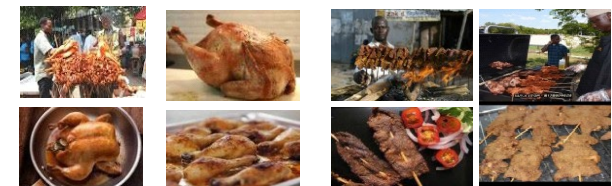


Dambu nama/meat floss (prepared from red and white meat) Kilishi (Nigerian beef jerky)



Langabu/ganda (Cattle hide)

Soye (fried meat)



Guron kaza (Roasted chicken)

Tsire (skewered meat)

## Importance of RTE Meat Products

### Highly appreciated:

- ✓ Taste
- ✓ Texture
- ✓ Storage stability

### Safe:

- ✓ Treatments involved during their production process i.e., heat, salt and spices.

### Highly Nutritious:

- ✓ Concentrated form of proteins
- ✓ Low moisture content

### Extended Shelf Life:

- ✓ Low  $a_w$
- ✓ Limited lipid and protein oxidation

## Public Health Concerns

- Contamination of meat and meat products with foodborne pathogens remains an important public health issue.
- It can lead to illness if there is malpractice in
  - handling,
  - cooking, or
  - post-cooking storage of the product.
- The microbiological hazards in the processing operation are well known and often lead to food poisoning. (Situations where food causes a toxic reaction in the body.)

## Causes of Food Poisoning

- Food poisoning can be caused by either biological, physical, or chemical agents.
- Most cases of food poisoning are infections caused by a variety of bacteria, viruses, and parasites.
- Harmful toxins and chemicals also can contaminate foods and cause foodborne illness.

## Common Symptoms

- ✓ Nausea,
- ✓ Vomiting,
- ✓ Stomach cramps, and
- ✓ Diarrhea.
- ✓ Symptoms can sometimes be severe, and some foodborne illnesses can even be life-threatening.

## Vulnerable Groups Include

- ✓ Older adults,
- ✓ Young children,
- ✓ People with immune systems weakened from medical conditions, such as diabetes, liver disease, kidney disease, organ transplants, or HIV/AIDS, or
- ✓ People receiving chemotherapy or radiation treatment, and
- ✓ Pregnant women.

## Pathogens Found in RTE-MPs

- Most prevalent are *Staphylococcus aureus*, *Escherichia coli* and *Salmonella spp.*
- Diverse and numerous types of locally produced RTE foods include varieties of biological, physical or chemical agents.
- Research has identified more than 250 foodborne diseases in RTE-MPs.

## How to Reduce Hazards Associated with Ready-to-Eat Meats

- Need to re-heat before consumption for few minutes.
- Production and processing should be standardized.

## Important Problems Identified



Slaughter slabs



Raw meat displayed on tables



- Pathogenic bacteria cause outbreaks and sporadic cases of diseases.
- The products are often displayed for sale on open stalls in un-sanitized utensils.
- This, in turn, results in a huge loss of the food product through microbial contamination and other issues.
- Consumers ingest food unaware of potential contamination and illness caused by bacterial pathogens.