

Detection Of Adulterated Horsemeat In Food Products

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Adulterated 1

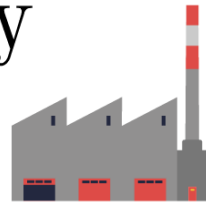
Adulteration:

Adulteration is to (illegally) add impure or un-allowed ingredients to a product. Or to substitute a cheaper ingredient for a more expensive one without proper labelling.



Why Is Food adulterated?

To increase the quantity
of production



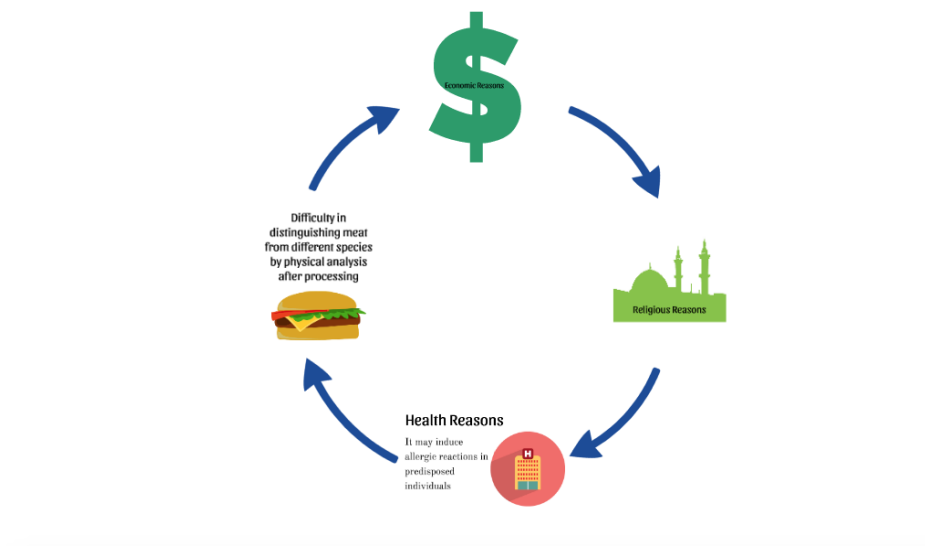
To increase the profit



To lower the cost of
production

**Reasons to check
for adulteration**







Religious Reasons


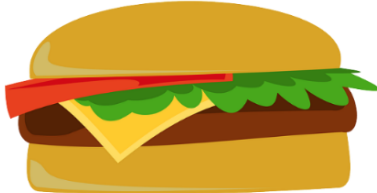


Health Reasons

It may induce
allergic reactions in
predisposed
individuals



Difficulty in
distinguishing meat
from different species
by physical analysis
after processing



70 / 70



South Africa:

Species Substitution and mislabeling have been detected in meat products

India:

Excess amount of lead have been found in instant noodles



Taiwan:

Cooking oil have been blended with recycled cookig oil, grease and leather cleaner



China:

Rat meat has been sold
as lamb meat



Europe:

Horsemeat has been sold as beef



UK:

Pork has been found in beef burgers labeled "Halal"

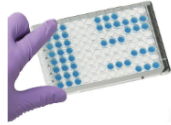


Horsemeat scandal

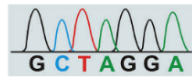
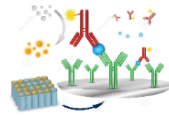
Ireland & UK

2013

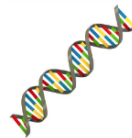
Horsemeat scandal
Ireland & UK



ELISA



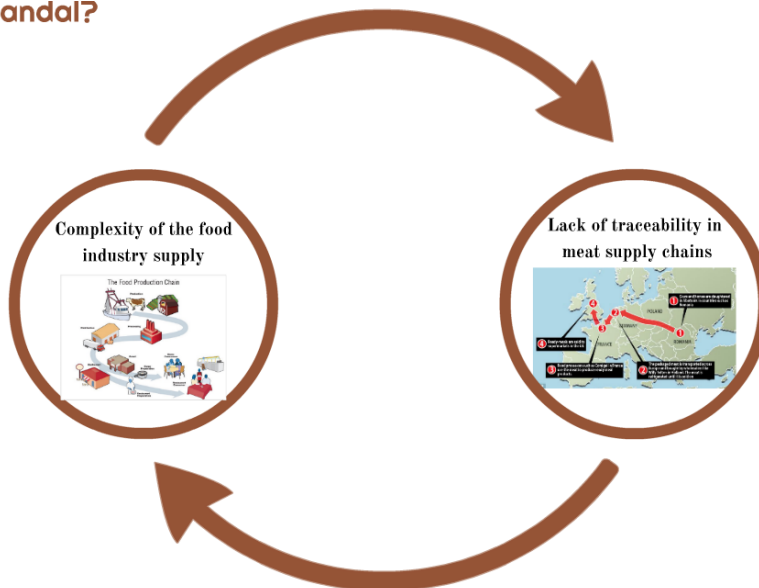
DNA



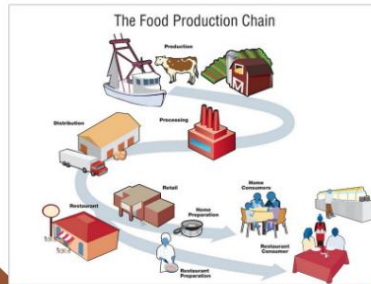


What was the cause of this scandal?

Use of this scandal?

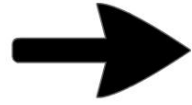


Complexity of the food industry supply

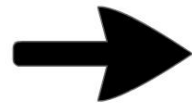
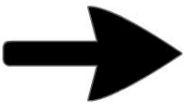


Lack of traceability in meat supply chains





Beef is getting more expensive.



Sick and dead horses



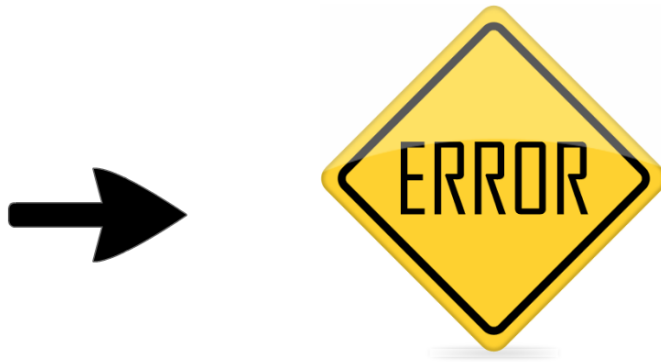
The distance between the end consumer and the source



Source

The product passes through lots of hands

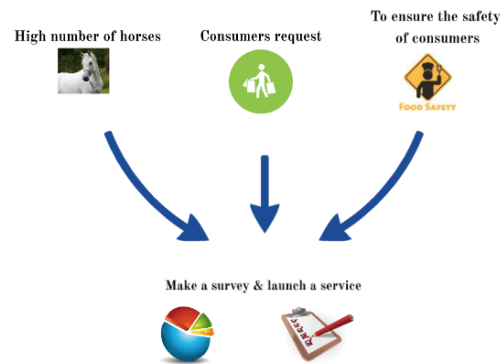
Destination



Increasing the error in the production system

Why it is important to check for horse adulteration in our region?

by it is imp
adulteration i



High number of horses



Consu



horses

Consumers request

To ens
of



quest

To ensure the safety
of consumers



Make a survey & launch a service



Ways to detect meat authentication

2 methods

Protein based methods

Immunological assays (ELISA)

Electrophoretical techniques



Chromatographic techniques

DNA based methods

PCR technique

Real Time PCR



DNA sequencing

Method used to detect horsemeat

RT-PCR

Materials



 **Method**  



Steps to Extract DNA by RT-PCR

- Extraction of DNA by the addition of lysis buffer and proteinase k enzyme to sample.
- Binding of DNA to silica beads.
- Multiple washing steps.
- Drying.
- Elution of targeted DNA.
- Detection of targeted DNA by RT-PCR instrument.

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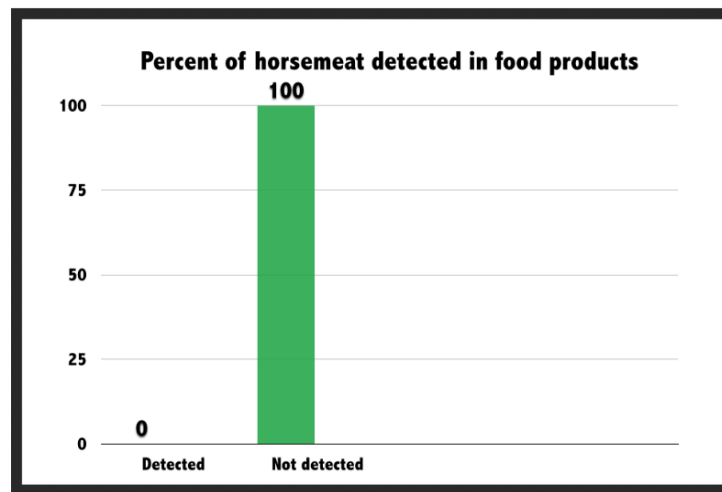
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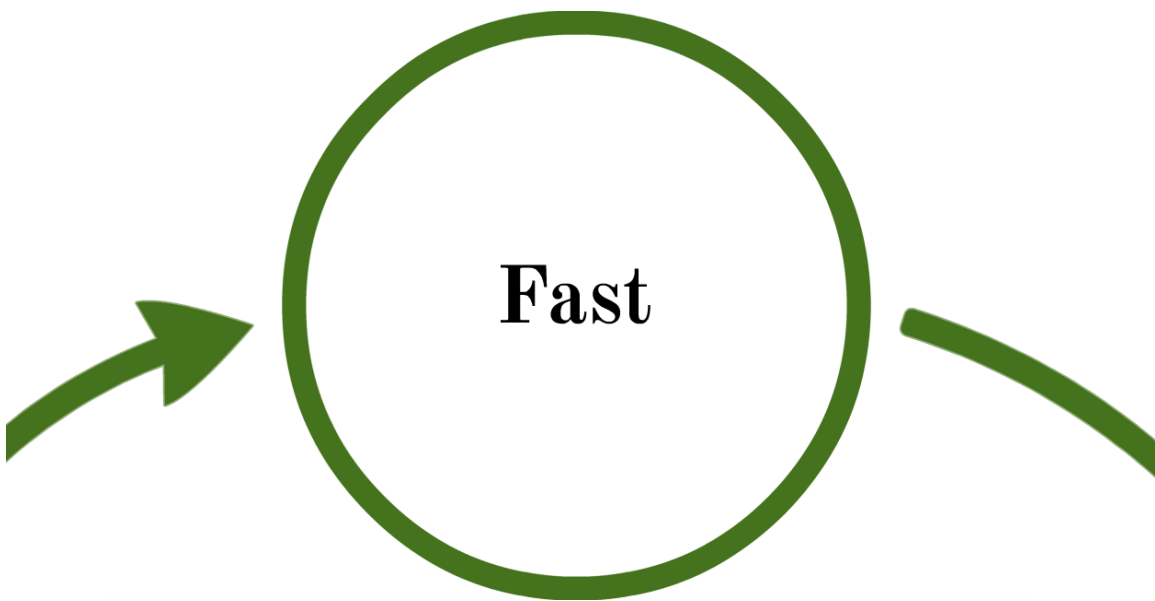
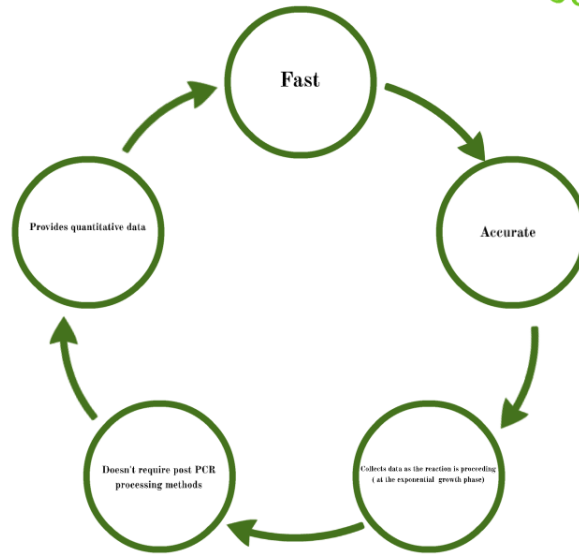
Results

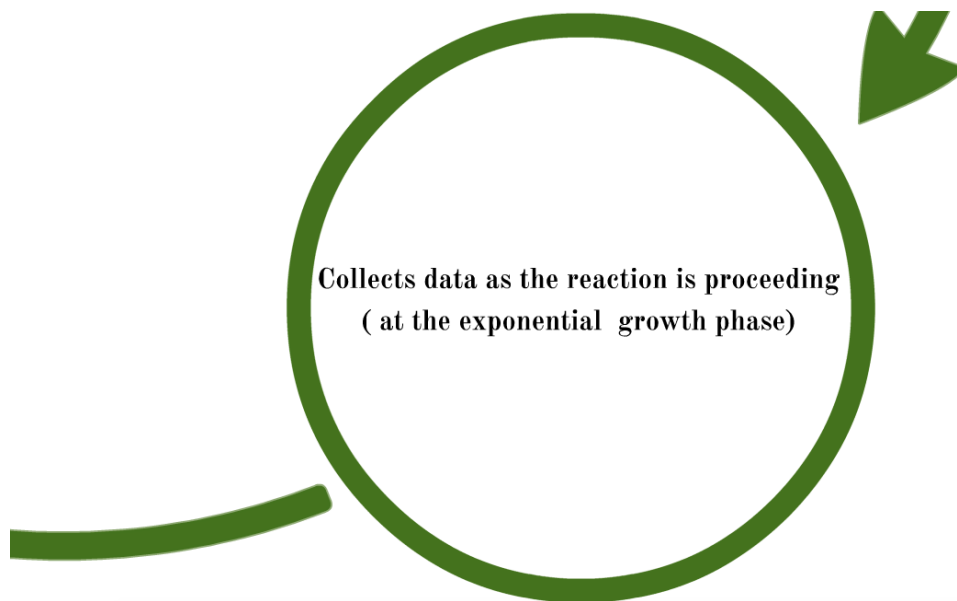
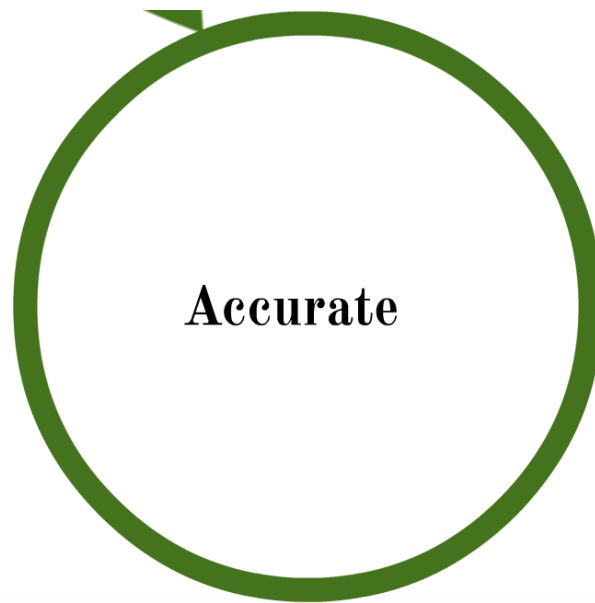


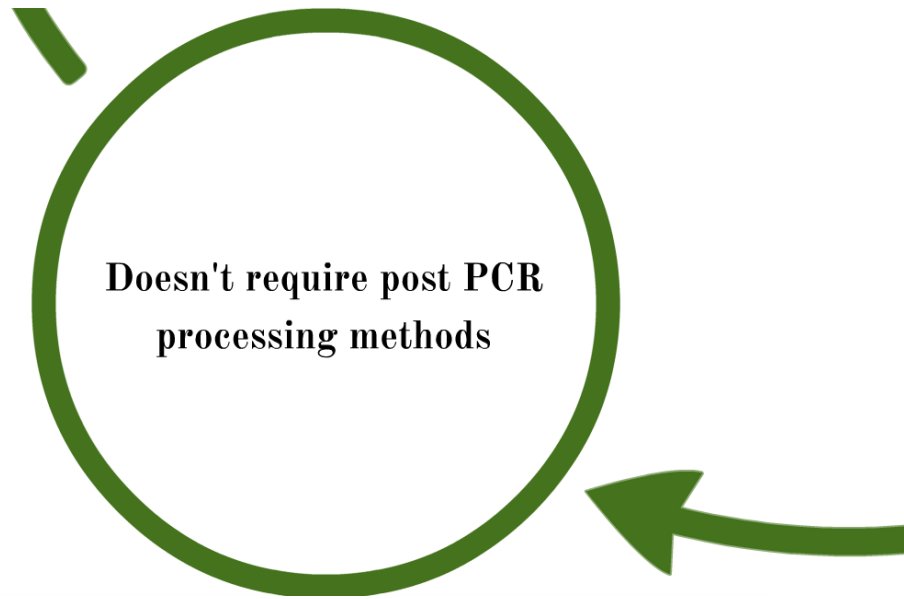


Advantages

yes







[illegible]