

# Comparison of two salmonella detection methods using VIDAS

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Most foods of animal origin contain bacteria that can be pathogenic to humans. Some of them are present at primary production level and still remain in the raw meat after slaughtering and even in the final product if hygiene and storage practices are not adapted or respected.

Processed poultry already have a heavy microbial load coming from their breeding environment, such as dusts and faeces which can contaminate feathers, legs and skin.

Contamination also comes from the large amount of micro-organisms contained in the intestines and respiratory system.

Poultry carrying salmonella are a very important contamination source. Moreover, slaughtering and evisceration processes contribute to increase the risk of presence in the final product.

Raw poultry meat presents a various natural microflora, mostly constituted by non-pathogenic micro-organisms for the human.

So the main target of the treatment is to reduce the total number of micro-organisms as much as possible in order to ensure its shelf-life during distribution and commercialisation and also to prevent cross contamination with some potentially present pathogens.

## Detection methods

Salmonella contamination monitoring is very important to help to select and apply efficient measures for preventing and controlling salmonellosis.

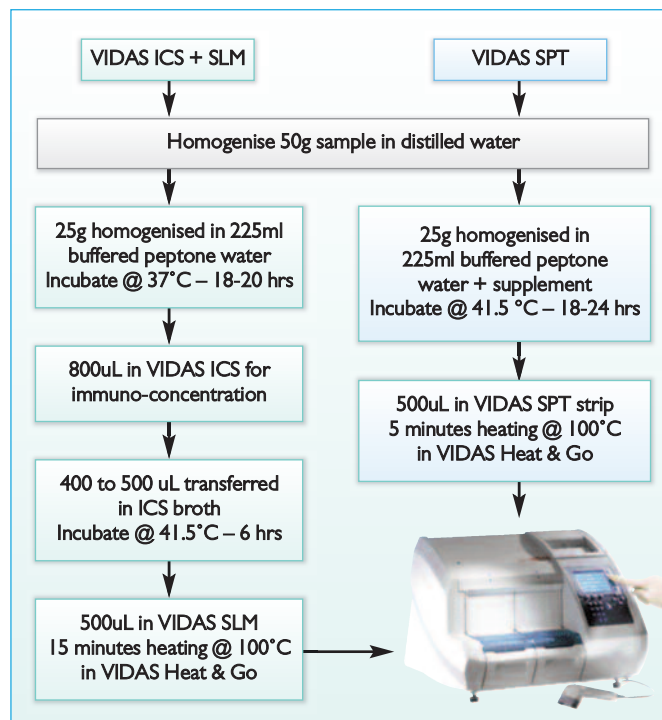


Fig. 1. Protocols.

Salmonella detection methods are well documented but some combinations between enrichment and selective media show better efficiency to detect this type of micro-organisms.

Nutreco manufacturing sites are routinely using the VIDAS Immunocentration Salmonella (ICS) strip in combination with VIDAS salmonella assay on chick batches right after slaughtering.

This method based on the use of a cocktail of monoclonal and polyclonal antibodies provides a result in 24 hours.

bioMérieux has recently devel-

oped a new method based on bacteriophage recombinant protein (VIDAS UP Salmonella), which allows a very high specificity for salmonella.

This new protocol consists of a single enrichment in supplemented buffered peptone water in order to inhibit competitive flora associated with an incubation at a selective temperature (41.5°C).

The enrichment (18-24 hours) is directly followed by the VIDAS strip inoculation which allows a very simplified protocol and a negative result in less than 19 hours.

The aim of this study is to evaluate

the new VIDAS SPT (Salmonella Phage Technology) versus the current method used by Nutreco, VIDAS ICS + SLM for the detection of salmonella from neck skin samples.

## Materials and methods

Some 87 neck skin samples (from different lots) and from two different plants (Lerida and Canarias) were analysed. Each sample comprised 50g of skin coming from different points of the same lot of slaughter.

They were collected at different days in the week and sent to the FRC laboratory by refrigerated transport.

Each sample was homogenised and split into two in order to be processed by both methods.

Presumptive positive results were confirmed by plating from broth (ICS broth for VIDAS ICS + SLM and buffered peptone water + supplement for SPT) to XLD and ChromID Salmonella agars. Characteristic colonies were then serotyped.

## Results

The raw results have been processed in accordance with calculations described in the ISO 16140 standard. The VIDAS ICS + SLM method was used as the reference method. The results are shown in Table 1.

As the supplementary positive found on VIDAS is confirmed as a true positive, and according to the ISO 16140 specifications, the sensitivity of VIDAS SPT is 100%.

## Conclusion

We can consider that both methods are equivalent. The VIDAS SPT method has the advantage of being easier to perform than ICS + SLM as the protocol simply consists of a single enrichment step followed by strip inoculation with a result in less than 19 hours.

Table 1. Results.

VIDAS SPT	VIDAS ICS + SLM		Relative specificity = 98.79%
	Positive	Negative	
Positive	Positive accordance (PA=4)	Positive deviation (PD=1)	Relative sensitivity = 100%
Negative	Negative deviation (ND=0)	Negative accordance (NA=82)	Relative accuracy = 98.85%
			Positive deviation = 1.14%
			Negative deviation = 0%