A Final Report Submitted to

SYRVET, INCORPORATED

For the Project

DETECTION TESTING OF THE SYRVET 16 GAGE NEEDLE

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Submitted by

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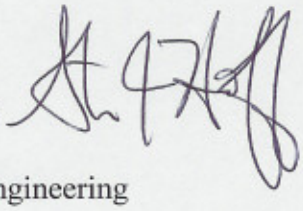

OBJECTIVES

The objective of this research project was to test the detection characteristics of the SyrVet 16 gage x 1" long needles using a commercially available metal detector common in many packing plants. The objective was to conduct an independent test using procedures and conditions similar to prior needle detection tests conducted.

MATERIALS AND METHODS

The following documents the procedures used for needle fragment detection testing of the SyrVet needles. Detectability testing was conducted using a state-of-the-art metal detector from Safeline, Inc. The detector used was similar to the unit shown in Figure 1. The Safeline detector used Power Phase technology with an aperture of 5" high and 14" long.

Figure 1. Safeline, Inc *Power Phase* metal detector used to conduct needle detection testing.

Detection testing was conducted for the SyrVet 16 gage x 1" long needles. Needle fragments of ¼, ½ and 1 inches long were tested and three orientations of each combination were tested. The three orientations conducted were;

Horizontal Back (HB): Needle fragment horizontal in the meat and imbedded in the back of the meat (last to go through the detector) perpendicular to the long axis of the detector.

Horizontal Side (HS): Needle fragment horizontal in the meat and imbedded in the side of the meat parallel to the long axis of the detector.

Vertical Center (VC): Needle fragment vertical in the meat and imbedded in the center top of the meat.

The detector had an automated set-up feature that eliminated the product effect. In other words, if a relatively consistent cut of meat is traveling through the detector at the plant, the detector could be set-up to "correct" for this meat product allowing only fragments of metal to be detected by the machine. This feature was used for all testing which allowed for a consistent method of eliminating the product and concentrating only on the needle fragments alone.

A standard cut of pork shoulder roast was purchased from a local grocery store before testing. The

weight of pork shoulder roast tested was 3.04 lbs. For each test conducted, full-size needles were randomly selected from a total supply of 100 needles. Six needles were randomly selected and cut-to-length in ¼", ½" or 1" long fragments; two cuts of each. In every case, the fragments cut contained the bevel edge of the needle. The needle was imbedded into the meat at one of the three orientations listed above to a point where the end of the needle was level with the meat outline. This needle fragment was then tested for 5 passes through the detector at each of the three orientations listed above. Two replications were conducted for each of these combinations.

Results and Discussion

Table 1 outlines the results from the SyrVet 16 gage x 1" long needle detection testing. In general, regardless of the needle orientation, all needle fragment lengths were 100 percent detectable.

Table 1. Percent detection of the SyrVet 16 gage x 1" long needle as affected by needle gage, fragment length, and orientation of needle fragment through detector. Results are percent detection for 5 passes through the machine at each combination and with two replications. Each replication consists of a different needle.

			Orientation				
Gage	Fragment Length, Inch	Rep	HS	HB	VC	Combined	% Detection
16	¼	1	5/5	5/5	5/5	15/15	100
		2	5/5	5/5	5/5	15/15	100
		%	100	100	100		100
16	½	1	5/5	5/5	5/5	15/15	100
		2	5/5	5/5	5/5	15/15	100
		%	100	100	100		100
16	1	1	5/5	5/5	5/5	15/15	100
		2	5/5	5/5	5/5	15/15	100
		%	100	100	100		100

Every attempt was made to ensure that the set-up used for this test was similar in all regards to previous testing on needle detection. The Power-Phase detector used has an automated procedure for correcting product effect. This procedure was followed in the same manner as previous needle detection testing.

Prior testing on needle strength and breakage indicated that needles will break at the hub/needle interface only if a bent needle is straightened and reused. Therefore, for a 16 gage x 1" needle, the most likely needle fragment length of concern would be 1" in length. For the SyrVet 16 gage x 1" long needle, clearly the results indicate 100% detection at this fragment length. Further confirmation of this was achieved by testing the ½" and ¼" fragments where again 100% detection was realized. In all past needle detection testing, the standard fragments investigated were ½" and 1" fragments. The results presented here for the ½" and 1" fragment lengths can be used to directly compare with all past needle detection testing results. The ¼" needle fragment testing was used to provide further evidence as to the detection potential of the 16 gage SyrVet needles supplied.

Conclusions

Needle detection results of the SyrVet 16 gage needles indicates clearly that these needles are 100 percent detectable at the ¼", ½" and 1" long fragment lengths, in all orientations used for testing for the controlled experimental conditions used in this test.

Acknowledgements

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