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4. RESULTS

Table (4) Results of the designed experiment showing the detection limit of mixing equine and pork meat with beef and chicken meat.

Percent(%)	Species	
	Equine	**Pork**
10%	+ve	+ve
9%	+ve	+ve
8%	+ve	+ve
7%	+ve	+ve
6%	+ve	+ve
5%	+ve	+ve
4%	+ve	+ve
3%	+ve	+ve
2%	+ve	+ve
1%	+ve	+ve
0.5%	+ve	+ve
0.25%	+ve	+ve
0.1%	+ve	+ve
Control positive	+ve	+ve
Control negative	-ve	-ve

Table (5) Incidences of adulteration of packaged high brands beef luncheon of three meat processing plants (Group1).

Samples	No.		Species			
			Equine		Pork	
			No. of +ve samples	%	No. of +ve samples	%
Beef Luncheon	Plant A	6	1	16.6%	-ve	
	Plant B	6	1	16.6%	-ve	
	Plant C	6	1	16.6%	-ve	
Total	18		3	16.6%	-ve	

No= number +ve =positive -ve= negative %=percent

Table (6) Incidences of adulteration of packaged high brands beef burger of three meat processing plants (Group1).

Samples	No.		Species			
			Equine		Pork	
			No. of +ve samples	%	No. of +ve samples	%
Beefburger	Plant A	6	1	16.6%	ve-	
	Plant B	6	-ve	-ve	-ve	
	Plant C	6	-ve	-ve	-ve	
Total	18		1	5.5%	-ve	

Table (7) Incidences of adulteration of packaged high brands beef kofta of three meat processing plants (Group1).

Samples	No.		Species			
			Equine		Pork	
			No. of +ve samples	%	No. of +ve samples	%
Beef kofta	Plant A	6	-ve	-ve	ve-	
	Plant B	6	-ve	-ve	-ve	
	Plant C	6	-ve	-ve	-ve	
Total	18		0	0	-ve	

Table (8) Incidences of adulteration of packaged high brands chickenluncheon of three meat processing plants (Group1).

Samples	No.		Species			
			Equine		Pork	
			No. of +ve samples	%	No. of +ve samples	%
Chicken luncheon	Plant A	6	1	16.6%	ve-	
	Plant B	6	-ve	-ve	-ve	
	Plant C	6	-ve	-ve	-ve	
Total	18		1	5.5%	-ve	

Table (9) Incidences of adulteration of packaged high brands chickenburger of three meat processing plants (Group1).

Samples	No.		Species			
			Equine		Pork	
			No. of +ve samples	%	No. of +ve samples	%
Chicken burger	Plant A	6	-ve	-ve	ve-	
	Plant B	6	-ve	-ve	-ve	
Total	12		0	0	-ve	

Table (10) Incidences of adulteration of packaged high brands chickenkofta of three meat processing plants (Group1).

Samples	No.		Species			
			Equine		Pork	
			No. of +ve samples	%	No. of +ve samples	%
chicken kofta	Plant A	6	-ve	-ve	ve-	
	Plant B	6	-ve	-ve	-ve	
Total	12		0	0	-ve	

Table (11) Incidences of adulteration of non packaged low brands beef meat products (luncheon – burger – kofta- minced meat- sausage) (n=6) (Group2).

Samples	NO.	Species	
		Equine	Pork
Beef Luncheon	6	-ve	-ve
Beef Burger	6	-ve	-ve
Beef Kofta	6	-ve	-ve
Beef Minced meat	6	-ve	-ve
Beef Sausage	6	-ve	-ve
Total	30	-ve	-ve

Table (12) Incidences of adulteration of non packaged low brands chicken meat products (luncheon – burger – kofta- minced meat- sausage) (n=6) (Group2).

Samples	NO.	Species	
		Equine	Pork
Chicken Luncheon	6	-ve	-ve
Chicken Burger	6	-ve	-ve
Chicken Kofta	6	-ve	-ve
Chicken Minced meat	6	-ve	-ve
Chicken Sausage	6	-ve	-ve
Total	30	-ve	-ve

Table (13) Adulteration ratesaccording to all examined meat products. (Group1and 2).

Meat product	No. of examined samples	No. of adulterated samples	Percent (%) of adulteration
Luncheon	48	4	8.3%
Burger	42	1	2.3%
Kofta	42	0	0
Minced meat	12	0	0
Sausage	12	0	0
Total	156	5	3.2%

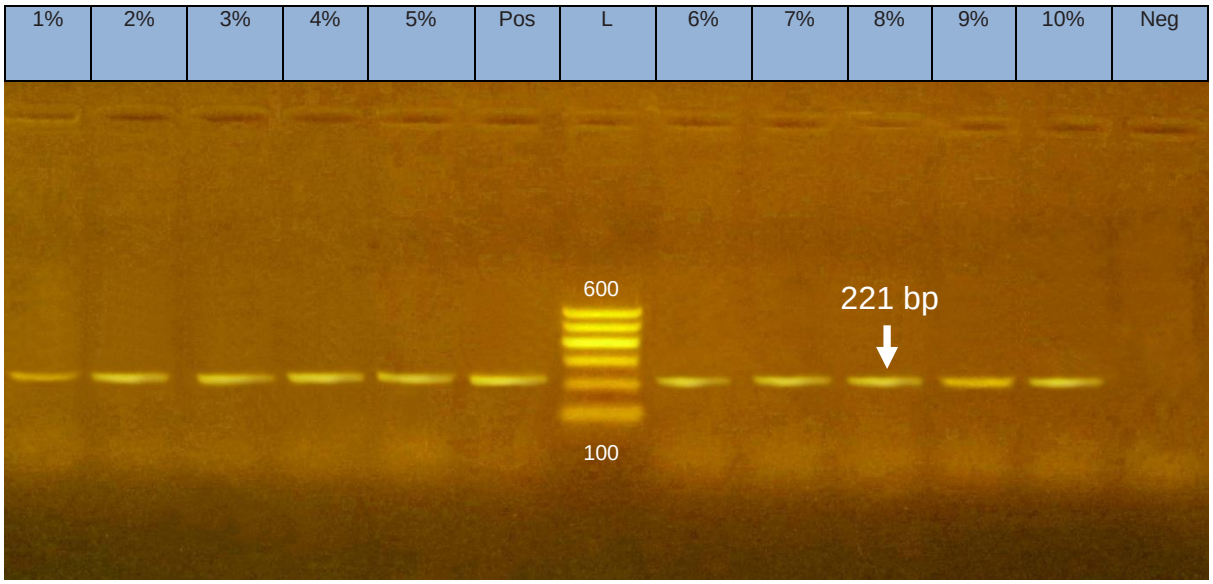

Figure (1) Electrophoresis analysis with ethidium promide stained agarose gel 1.5% showed PCR product amplified fragment of 221bp (specified for equine species) from extracted DNA of experimental mixtures of beef with equine meat generated by common species oligonucleotide primers. Where lane neg in the rhigt side : negative control for the run(no addition of DNA), lane L:100bp DNA marker (100-200-300-etc), lane pos: control positive equine species DNA, other lane from 1% tell 10% mixture of equine and beef meat.

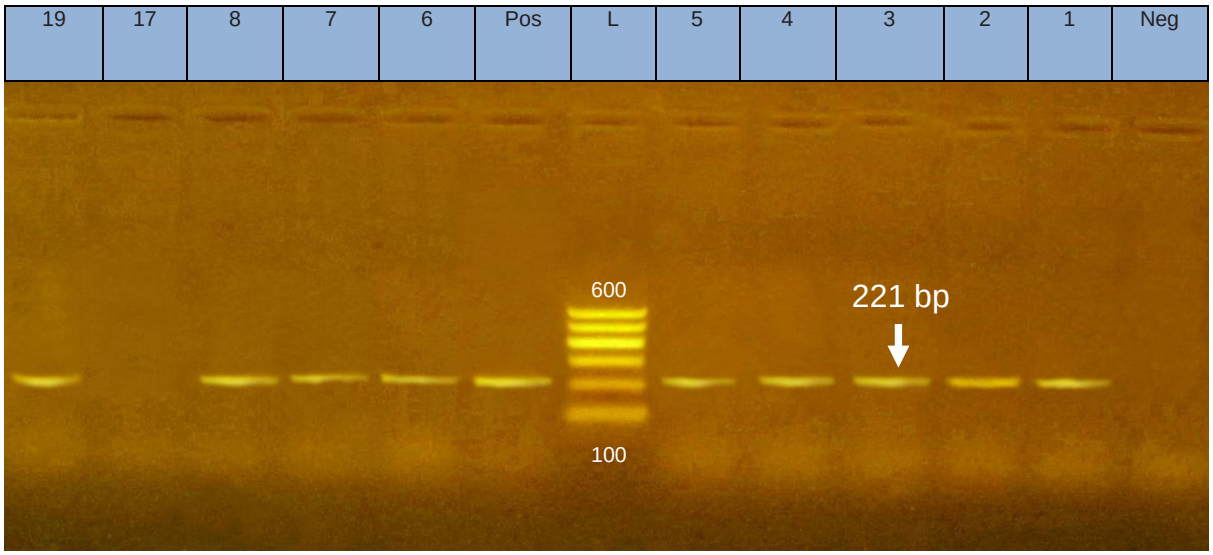

Figure (2) Electrophoresis analysis with ethidium promide stained agarose gel 1.5% showed PCR product amplified fragment of 221bp (specified for equine species) from extracted DNA of experimental mixtures of beef and chicken meat with equine meat generated by common species oligonucleotide primers. Where lane neg in the rhigt side : negative control for the run(no addition of DNA), lane 1: 0.1% mixture of equine and beef meat, lane 2: 0.25% mixture of equine and beef meat, lane 3:0.5% mixture of equine and beef meat, lane 4: 1% mixture of equine and beef meat, lane 5: 0.1% mixture of equine and chicken meat, lane L:100bp DNA marker (100-200-300-etc), lane pos: control positive equine species DNA, lane 6: 0.25% mixture of equine and chicken meat, lane 7: 0.5% mixture of equine and chicken meat, lane 8: 1% mixture of equine and chicken meat, lane 17: pure chicken meat DNA as a negative control for test mixtures, lane, 19: pure equine meat as a positive control for test mixtures.

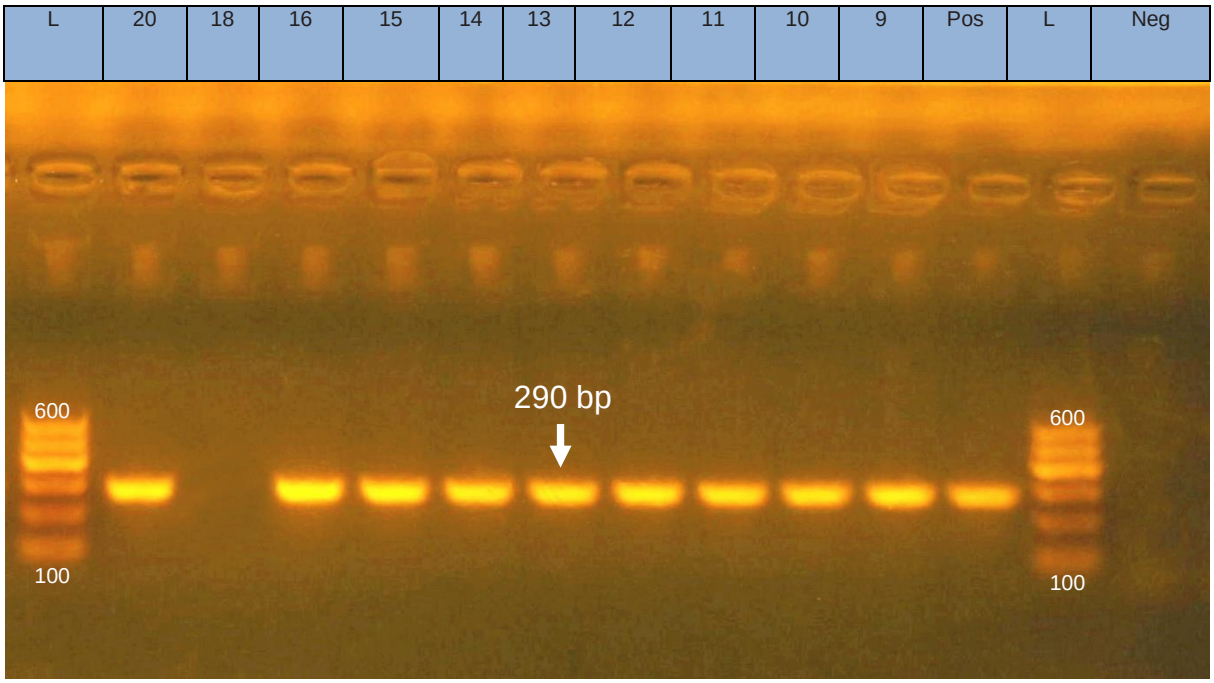

Figure (3) Electrophoresis analysis with ethidium promide stained agarose gel 1.5% showed PCR product amplified fragment of 290bp (specified for pork species) from extracted DNA of experimental mixtures of beef and chicken meat with pork meat generated by common species oligonucleotide primers. Where lane neg in the rhigt side : negative controle for the run(no addition of DNA), lane L:100bp DNA marker (100-200-300-etc), lane pos: control positive pork species DNA, lane 9: 0.1% mixture of pork and beef meat, lane 10: 0.25% mixture of pork and beef meat, lane 11:0.5% mixture of pork and beef meat, lane 12: 1% mixture of pork and beef meat, lane 13: 0.1% mixture of pork and chicken meat, lane 14: 0.25% mixture of pork and chicken meat, lane 15: 0.5% mixture of pork and chicken meat, lane 16: 1% mixture of pork and chicken meat, lane 18: pure chicken meat DNA as a negative control for test mixtures lane, 20: pure pork meat as a positive control for test mixtures.

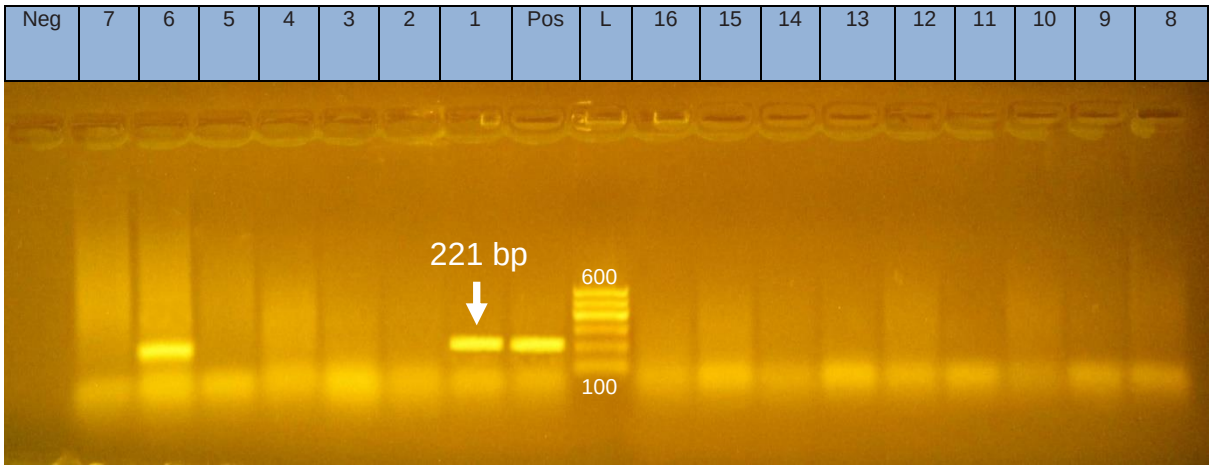

Figure (4) Electrophoresis analysis with ethidium promide stained agarose gel 1.5% showed PCR product amplified fragment of 221bp (specified for equine species) from extracted DNA of beef and chicken meat products generated by common species oligonucleotide primers. Where lane L:100bp DNA marker (100-200-300-etc), lane pos: control positive equine species DNA, lane neg: negative control for the run(no addition of DNA), lane 1: positive sample (beef luncheon plant B), lane 6: positive sample (chicken luncheon plant A) while other lanes : negative samples.

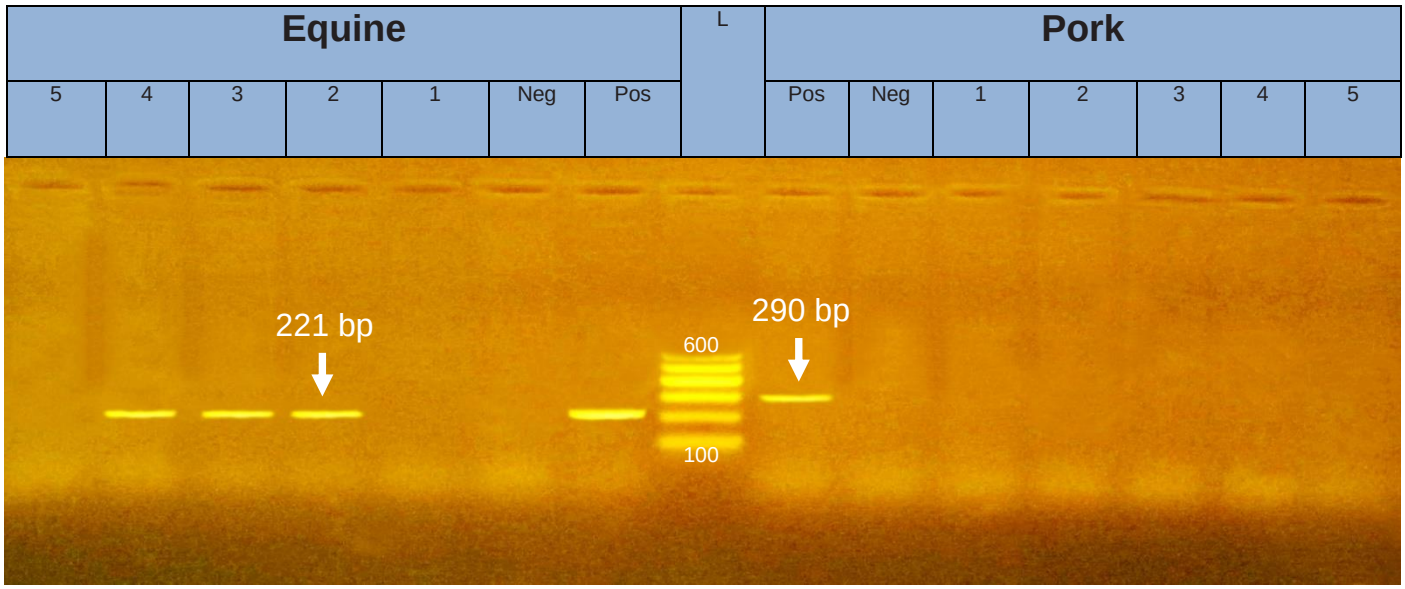

Figure (5) Electrophoresis analysis with ethidium promide stained agarose gel 1.5% showed PCR product amplified fragment of 221bp (specified for equine species) and 290bp (specified for pork species) and amplified fragment from extracted DNA of beef and chicken meat products generated by common species oligonucleotide primers. Where lane L:100bp DNA marker (100-200-300-etc), lane pos: control positive equine species and pork species DNA, lane neg: negative control for the run(no addition of DNA), lane 2: positive sample (beef luncheon plant A), lane 3: positive sample (beef burger plant A), lane 4: beef luncheon plant C) , while other lanes : negative samples.