

CHAPTER V

RESULTS

1. Biochemical reaction tests of *Salmonella* Enteritidis isolates

1.1. *Salmonella* Enteritidis isolates from the human patients

The total number of 480 *Salmonella* Enteritidis isolates from the human patients in Thailand in the year 2002 which obtained from the WHO National *Salmonella* and *Shigella* center (NSSC), the National Institute of Health (NIH), Department of Medical Sciences, Thailand were confirmed by biochemical reaction tests and result were described in table 11.

1.2. *Salmonella* Enteritidis isolates from the chicken meat

The total number of 78 *Salmonella* Enteritidis isolates from the chicken meat in Thailand in the year 2002 which obtained from the WHO National *Salmonella* and *Shigella* center (NSSC), the National Institute of Health (NIH), Department of medical sciences, Thailand were confirmed by biochemical reaction tests and result were described in table 11.

2. Serotyping of *Salmonella* Enteritidis isolates

2.1. *Salmonella* Enteritidis isolates from the human patients

The total number of 480 *Salmonella* Enteritidis isolates from the human patients in Thailand in the year 2002 which obtained from the WHO National *Salmonella* and *Shigella* center (NSSC), the National Institute of Health (NIH), Department of Medical Sciences, Thailand were confirmed by serotyping test and result were described in table 12.

Table 11. Biochemical reaction tests and result of *Salmonella* Enteritidis.

Test	result
Triple Sugar iron (TSI)	acid butt/alkaline slant (K/A), gas
H ₂ S	positive
Motility	positive
Indole	negative
Citrate	positive
Urease	negative
LDA	negative
LDC	positive
Dextrose	positive
Lactose	negative
Manitol	positive
Malonate	negative
Ducitol	positive
Sorbitol	positive
Salicine	negative
Mucate	positive
D-Tartrate	positive
ONPG	negative

Data from Bailey and Scott's. Diagnostic Microbiology, 1998

Table 12. Serological test and result of *Salmonella* Enteritidis.

Antisera	result
<i>Salmonella</i> group A-67	positive
<i>Salmonella</i> group A-I	positive
<i>Salmonella</i> group O:17-O:67	negative
<i>Salmonella</i> group A	negative
<i>Salmonella</i> group B	negative
<i>Salmonella</i> group C	negative
<i>Salmonella</i> group D	positive
<i>Salmonella</i> group E	negative
<i>Salmonella</i> group F	negative
<i>Salmonella</i> group G	negative
<i>Salmonella</i> group H	negative
<i>Salmonella</i> group I	negative
Vi	negative
O:1	negative
O:9	positive
O:12 ₂	positive
O:12 ₃	positive
O:46	negative

Table 12. Serological test and result of *Salmonella* Enteritidis (continue).

Antisera	result
H:L polyvalent	negative
H:G polyvalent H:f H:g H:s H:t H:m H:p H:q	positive negative positive negative negative positive negative negative
H:Unspecific	negative
H:eh	negative
Concentrate Antiserum: H:g, m	no spreading

2.2. *Salmonella* Enteritidis isolates from the chicken meat

The total number of 78 *Salmonella* Enteritidis isolates from the chicken meat in Thailand in the year 2002 which obtained from the WHO National *Salmonella* and *Shigella* center (NSSC), the National Institute of Health (NIH), Department of Medical Sciences, Thailand were confirmed by serotyping test and result were described in table 12.

3. Analysis of restricted fragments of chromosomal DNA from *Salmonella* Enteritidis by Pulsed-Field Gel Electrophoresis (PFGE)

PFGE analysis of *Xba* I restricted fragments of chromosomal DNA was applied to 558 *Salmonella* Enteritidis strains from both the human patients and chicken meat in Thailand in the year 2002. Figure 18 and 19 illustrate examples of the chromosomal DNA fingerprints of some of human patients and chicken meat strains generated with *Xba*I digestion. Digestion with restriction endonuclease enzyme *Xba*I demonstrated forty-two different patterns, between 10 to 14 DNA fragments were clearly distinguishable with sizes ranging from 48 kbp to 630 kbp. The banding patterns differed in one or two or more of bands (size) that could be evaluated. A dendrogram using a single isolate from each of the common pattern profiles is shown in figure 20, and arbitrarily designated PFGE profile 1 to 42. Twenty-four PFGE profiles were common to more than 1 strains (57% of PFGE profiles), while unique profiles were seen in the remaining eighteen PFGE profiles (43%).

Thirty-seven different PFGE profiles were found among the 480 human patients strains. Of these, thirty PFGE profiles were unique to human patients, 81% of PFGE profiles (18%). Sixteen PFGE profiles of these were found in group of two or more strains. The most common PFGE profiles were profile 2 (23 strains, 5%).

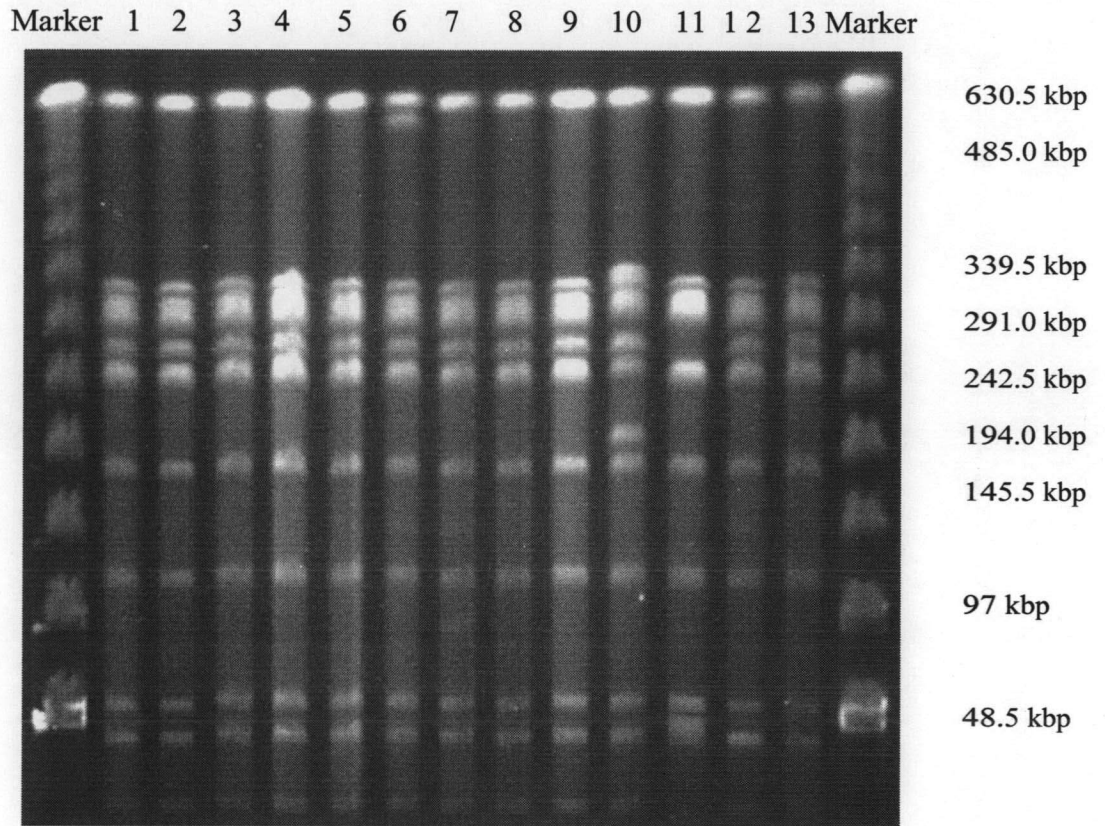


Figure 18. Representative of chromosomal DNA fingerprints of *Salmonella* Enteritidis generated with *Xba* I, the most common patterns from human patients and chicken meat.

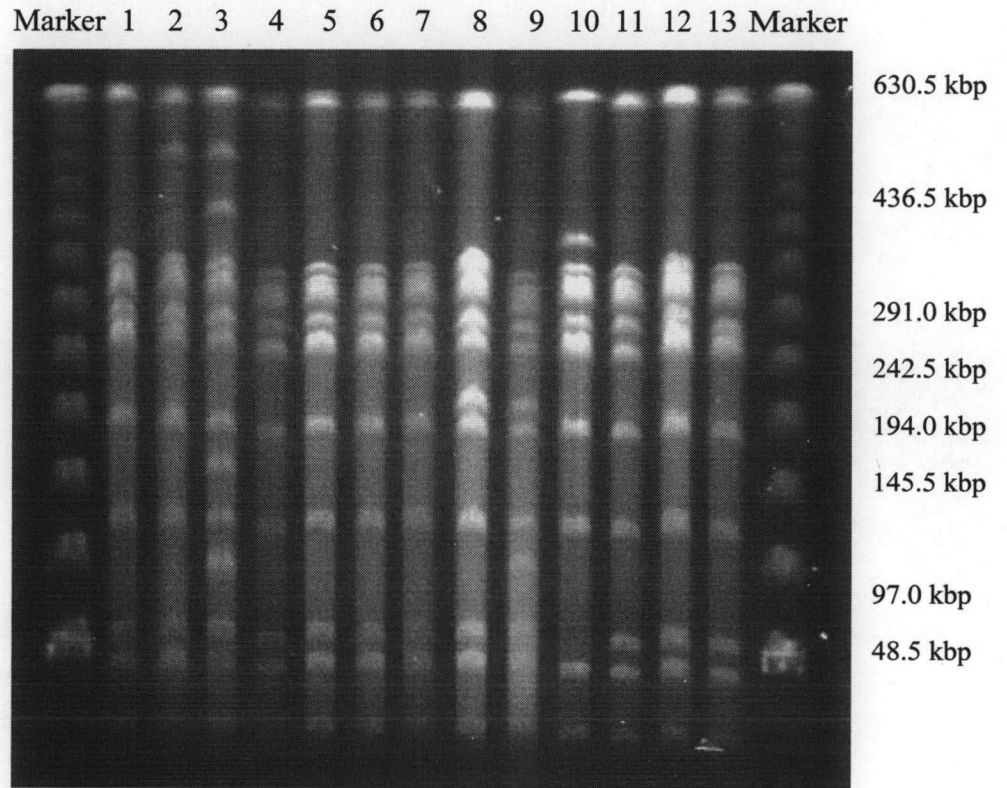


Figure 19. Representative of polymorphism of chromosomal DNA fingerprints of *Salmonella* Enteritidis from human patients and chicken meat generated with *Xba* I.

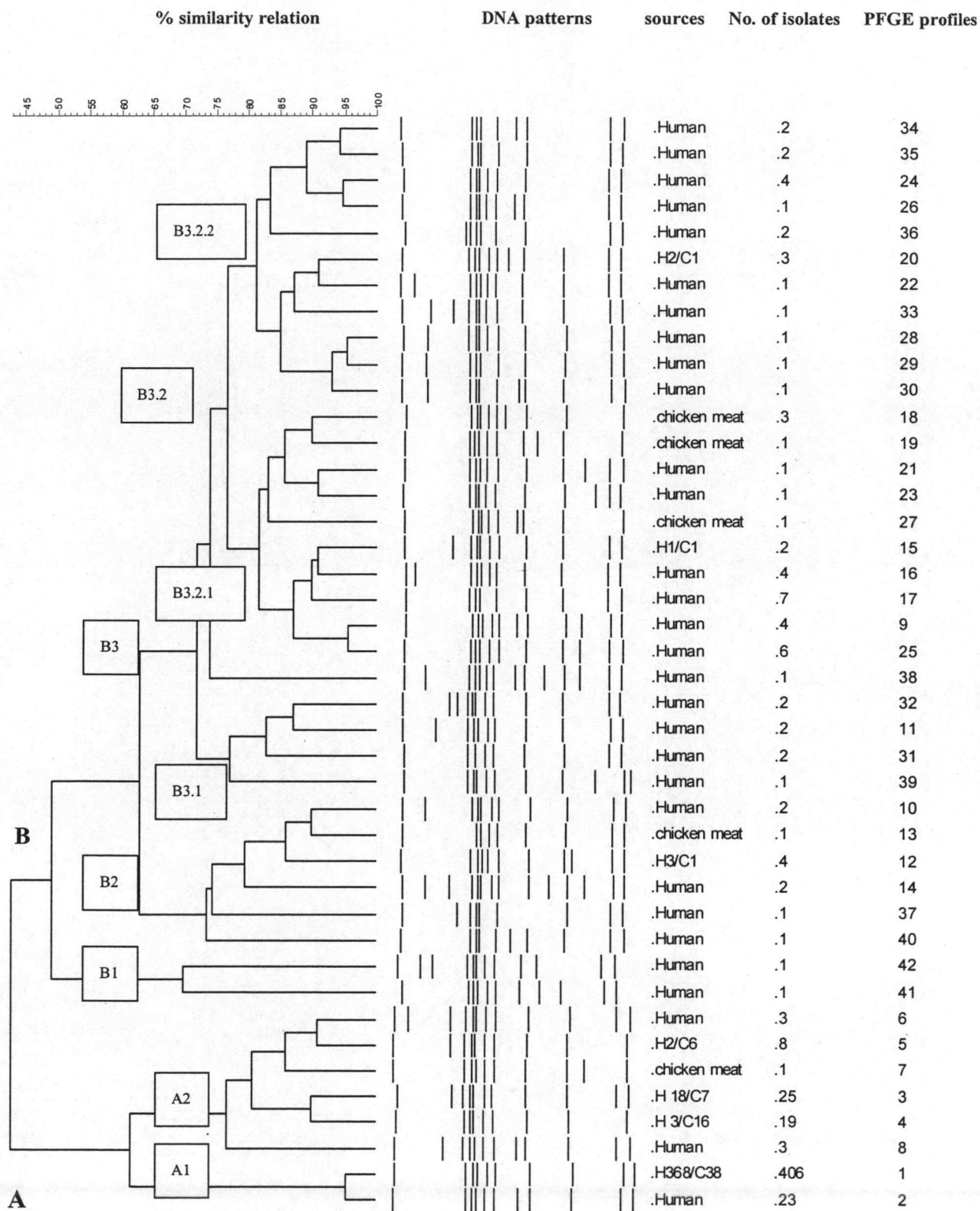


Figure 20. Dendrogram showing the cluster analysis of *Salmonella* Enteritidis

Twelve different PFGE profiles were found among 78 strains from chicken meats. Of these, five PFGE profiles were unique to chicken meats source, 7 strains from 78 strains (9%). One PFGE profile of these was found in group of two or more of strains. The most common PFGE profiles were profile 18 (3 strains, 4%).

Overall, seven PFGE profiles of the forty-two common PFGE profiles (17%) were seen in both human patients and chicken meat sources. The most number of strains of PFGE profiles were profile 1, 406 strains (73%), human patients 368 strains (91%) and chicken meat 38 strains (9%), which 77% of strains from human patients and 49% of strains from chicken meat.

From this dendrogram (Fig. 20.) was shown two major clusters (A and B) of human patients and chicken meat. They were 43 % similarity relation. Group A was divided into A1 and A2 which had similarity relation were 62 %. Group B was divided into three subgroup, B1, B2, and B3 with % similarity relation between B1 and B2 were 49 and % similarity between B2 and B3 were 63 % respectively. B3 was also divided into B3.1 and B3.2 with % similarity relation were 72%. B3.2 was also divided B3.2.1 and B3.2.2 with % similarity relation were 77 %.