Reviewer's report

Title: Molecular and Epidemiologic Analysis of County-Wide Outbreak Caused by Salmonella enterica subsp. enterica serovar Enteritidis Traced to a Bakery

Version: 1 Date: 16 February 2004

Reviewer: Anja Siitonen

Reviewer's report:

General

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. The authors report that the cause of the outbreak was Salmonella Enteritidis of a certain PFGE genotype and that the egg-covered bread, contaminated with this particular Salmonella type, was the source of this outbreak. The outbreak was traced to a bakery producing that bread. However, most of the patients falling ill with gastroenteritis during 29th and 30th of July had not consumed bread produced the bakery (Fig 1). The finding that indistinguishable Salmonella strains were present in stool samples of the patients consumed bread and in a bun obtained from a patient, is not the evidence that the source was bread. Unfortunately, no stool samples of the patients who did not consume bread were cultured for Salmonella. Actually, it seems more likely that also some other source(s) or vehicle(s) existed. The authors should critically discuss about these issues.

2. In addition, no food items were collected from the bakery for culturing of Salmonella. Since S. Enteritidis was isolated from only one of the buns obtained from the patient, the contamination of the bun at home of the patient cannot be excluded. This should also take into account in the discussion of the results.

3. What might be the other reasons or causes for the increased number of gastroenteritis cases during the outbreak period (shown in Fig 1)?

4. Table 1 is not interesting, and can be deleted. Instead, the authors could briefly describe the case record form, the data enquired and the data obtained from the patients.

The authors have used Fisher’s exact test to test if there was a significant increase in number of patients with gastroenteritis visiting the hospital during the outbreak period compared to the number of a week or 6 weeks before the outbreak. The significant increase was found, P < 0.005. It would be good if an expert statistician could check that the method really is suitable for comparison between these completely independent patient populations. In addition, the authors should give exact P values (still no more than with 3 decimals) always when it is possible. It seems that the P values are P < 0.001 rather than P < 0.005. If the authors used any software for calculations, it should be mentioned.

6. Page 27, Figure 3.
It seems that the profiles contain too much DNA or the exposure time has been too long resulting in excessive brightness of the bands. However, it does not matter since all the outbreak profiles can be seen and they clearly are indistinguishable from each other. However, despite of the brightness, the markers cannot be seen. Probably therefore, the authors have not been able to mark the molecular
weights on the side of the gel at the right positions. This should be corrected, or the marks for
different kilobases should be removed from the picture. In fact, in this kind of picture where only
profiles of the outbreak and non-outbreak strains are compared, the kb markers are not very
important.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the
author can be trusted to correct)

1. The manuscript should be reviewed for correct English grammar and spelling.

2. The use of the name Salmonella enterica subsp. enterica serovar Enteritidis and the abbreviation
of the name should be used similarly throughout the text (see especially the page 2).

3. Abstract/Method. The authors should mention the enzyme they used in PFGE.

4. Abstract/Results. The mentioning "All S. Enteritidis isolates were of serogroup D..." should be
removed because, by definition, the Enteritidis strains always belong to the group D.

5. Page 5, Patients and isolates.
   a) The first sentence could be moved on to the Discussion section.
   b) The second sentence could be moved on to page 7 (Data collection).
   c) The number of all patients and the number and origin of all specimens as well as of all strains
      should be given. It would be helpful for a reader if the authors presented these data in the form of a
      table.
   d) ER should be explained.

6. Page 7, Data collection and statistics.
   a) The number of the patients interviewed should be mentioned.
   b) The standardized case record form should be briefly described.

7. Page 7, Results.
   a) The total number of the patients with gastroenteritis should be checked. Namely, on this page the
      authors tell that the number is 162 but on the following page the number seem to be 165 (131 + 34).

8. Page 9, paragraph 2. Instead of the statement "... an extraordinary high percentage ...", the exact
   percentage should be given.

9. Page 11. There is a statement on this page that "... other items from the bakery were not found to
   be contaminated." However, there is no data given on these items, the method has not been
described either in the Material and Method section; these should be added.

10. Page 12, first paragraph. The last sentence is unclear. The authors probably mean that
    insufficient baking may be a risk factor for human health because it may not destroy microbial
    contamination.

11. Page 12, third paragraph. In the first sentence “Different Salmonella species...” should be
    “Different Salmonella serovars...”

12. Page 14. CDC should be spelled out.

13. Pages 15-22, References. All the references should be carefully checked in the list and also in
    the text. Namely:
a) Several references have been duplicated, e.g. 7 = 35, 10 = 23, 32 = 40, 38 = 39.
b) Also the spelling of the words should be checked.
c) Salmonella enterica should be written in italics.

14. Page 24, legend of Figure 3.
a) The legend is very difficult to follow; however, the checking of the language may help.
b) The author should mention the name of the marker in the figure legend or in the Method section.

15. Page 25, Fig.1. The different parts within the bars should be marked more clearly; now, they cannot be differentiated from each other.

Discretionary Revisions (which the author can choose to ignore)

1. Phage typing is a well working phenotypic method for differentiation of Salmonella Enteritidis strains. This method is internationally standardised letting the easy epidemiological comparison of Enteritidis isolates from different geographical locations. It is also known that there are Enteritidis strains that are genotypically indistinguishable in XbaI-PFGE but are distinguishable from each other by phage typing. Therefore, the authors may consider to phage type their outbreak isolates.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: Yes

Declaration of competing interests:

None