

Opinion on *Aeromonas* in natural mineral water (adopted by the SCF on 19/3/98)

Terms of reference

To advise the Commission on the potential microbiological risk associated with the presence of *Aeromonas hydrophila* and *A. caviae* in natural mineral waters (as defined in Council Directive 80/777).

Background

Limits for acceptable levels of *Aeromonas* in natural mineral water have been proposed by the Ministry of Health, Rome. The limits proposed are: that *Aeromonas* in mineral water should not exceed 10 cfu/100 ml, when measured at the source, and not exceed 100 cfu/100 ml in the container.

Discussion

Reports by Italian Board of Health provide excellent coverage of our knowledge of the occurrence and involvement of *Aeromonas* in human disease. In summary these are:

Aeromonas species are commonly occurring waterborne microorganisms that may be found in both surface and deep waters. Thus they occur in drinking water and may also be found in most raw foods. *Aeromonas hydrophila* and *A. caviae* have been isolated from mineral water.

The genus *Aeromonas* comprises a number of species of which only members of the *A. hydrophila* group have been reported to cause human illness. They may cause a wide range of infections, often amongst cancer patients and the immunocompromised (1). They have also been reported to cause gastrointestinal disease amongst adults and children.

Raw or minimally cooked seafoods have been mainly implicated in foodborne *Aeromonas* infections. There are no reports involving mineral water and one report involving (heavily) contaminated tap water (2).

Attempts to demonstrate what virulence factors are responsible for human infection and disease have been unsuccessful and human volunteer feeding experiments have led to inconclusive results.

The Principles for the Development of Microbiological Criteria for Foodstuff elaborated by the SCF states that a microbiological criterion should be established only on the basis of need and that such need should be based for example, on epidemiological evidence that a food is a hazard to health. Thus a microbiological criterion has been established for Natural Mineral Water. It further states that microorganisms included in a criterion should be: "Widely accepted as pathogens or indicator organisms to the particular food". The case for the inclusion of *A. hydrophila* and *A. caviae* in a criterion for natural mineral water presented by the Ministry of Health, Rome can not be justified on the basis of sporadic occurrence of *Aeromonas* spp alone. There is absence of epidemiological evidence to justify need and whilst there may be some circumstantial evidence that certain strains of *Aeromonas* spp are able to cause diarrhoea disease conclusive evidence of this is absent.

Conclusion

For the reason stated above the Committee concludes that *A. hydrophila* and *A. caviae* in natural mineral water do not present a potential risk to human health. It therefore does not believe that limits for *Aeromonas* (*Aeromonas hydrophila* and *A. caviae*) in natural mineral waters can be justified even as a precautionary measure. The microbiological safety of natural mineral waters depends on the measures prescribed in Council Directive 80/777 and principally on protection of

the source water and the processing plant from contamination. However, it seems likely that *Aeromonas* are a natural contaminant of such waters and thus will occur from time-to-time and be capable of growing in such waters when extracted and bottled. The potential of growth of contamination flora in bottled water is a separate question, which could lead to the use of other Management options, such as consumer information.

References

- ICMSF (1996) *Aeromonas*. In Microorganisms in Foods 5: Microbiological characteristics of food pathogens (Editors T.A. Roberts, A.C. Baird-Parker, R.B. Tompkin). Blackie Academic & Professional, London, pp 5-19.
- Krovacek, Karel. (1996) *Aeromonas* spp. as foodborne pathogens. Thesis. Department of Veterinary Microbiology, Swedish University of Agricultural Sciences. Uppsala, Sweden.