

Opinion 10-2023 of the Scientific Committee established at the FASFC on the microbiological safety in case of storage at room temperature of sliced tomatoes and onions

Background & terms of reference

The Scientific Committee is asked to address the following questions:

- From a food safety point of view, can it be accepted to deviate from the legal storage temperature for sliced tomatoes and onions, i.e. room temperature (16 – 29 °C) instead of maximum 7 °C for maximum 4 and 6 hours respectively?
- If so, can a short upward temperature variation of 3 °C, including the measurement uncertainty, still be accepted?

Method

The opinion is based on available scientific knowledge and expert opinion.

Advice

Salmonella spp., Shiga toxin-producing *E. coli* (STEC), *L. monocytogenes* and *B. cereus* were identified as the most relevant hazards in this context. Simulations of microbiological growth were performed using the Combase tool, based on the worst case conditions and known product characteristics. The results show that the requested deviation (storage for 4 or 6 hours at maximum 29 °C instead of the legal temperature of 7 °C) is not acceptable for the foods safety. Based on the simulations, the following time/temperature combinations for onions and tomatoes are proposed as possible deviations to the maximum temperature of 7 °C.

	29 °C	27 °C	25 °C	23 °C	21 °C
Onions (max. pH 5,8)	30 min	45 min	1h	1h15	1uh30
Tomatoes (max. pH 4,9)	1h	1h15	1h30	2h	2h45
Tomatoes (max. pH 4,6)	1h45	2h	2h30	3h15	4h

Recommendation

It is important for operators to be knowledgeable about the products they use and/or produce in order to carry out a correct microbiological food safety assessment in this type of case. If, in the future, the proposed time/temperature combinations for sliced tomatoes and onions were to be used by other operators, it is essential that the pH of these foods is determined. Moreover, pH should be measured at relevant times from a worst-case scenario in terms of food type, ripeness, variety, season, food processing method, and change during storage, etc. Here, multiple measurements should be made on different batches of the product.

Conclusion

It cannot be sufficiently demonstrated that storage of sliced tomatoes and onions at room temperature (16 - 29 °C instead of maximum 7 °C) during 4 hours or 6 hours does not present an elevated food safety risk. Based on simulations for potential growth of *Salmonella* spp., *E. coli* and *L. monocytogenes*, the requested storage temperature deviation is not acceptable. A number of acceptable time/temperature combinations are suggested as an alternative. If a larger deviation is desired, challenge tests for *Salmonella* spp. and *E. coli* (STEC) may be considered. A short upward temperature fluctuation of 3 °C is not acceptable, especially not at temperatures between 21 - 29 °C.

The full text is available on this website in dutch and in french.