Review of: "Cooling Beer With a Wet Paper Towel"

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Potential competing interests: No potential competing interests to declare.

Journal: Qeios

Paper: Cooling Beer With a Wet Paper Towel

Revision:

Paper concerns the comparison of the speed of cooling processes of bottled beer with the use of dry cooling and the use of evaporative cooling. The work has experimental and numerical character. The method of planning the experiment, the adopted calculation simplifications give the work a popular science character. Nevertheless the article is interesting and formulated conclusions are correct. The layout of the work is logical. In terms of editorial aspects, the work is correct

Critical remarks:

1. Experimental parameters (air velocity and humidity) are qualitatively defined. In the article there is no unambiguous numerical relationship between the experimental air flow velocities and the values of heat transfer coefficients assumed in boundary conditions.
2. The experiment results are a bit adulterated, due to the fact that water vapor evaporating from the towel improves the thermal conductivity of the air and also cools the bottles better without the towel (Fig. 1).
3. Figure 2c and 2d, air flow conditions were not precisely defined.
4. For Figure 3 air flow conditions should be given (free and forced convection, more intensive air flow)
5. Page 11, assumption, that „We approximated a wet paper towel wrapped around a bottle of beer as a thin layer of water surrounding the bottle", may be a to serious simplification. Thermal conductivity coefficients for water and wet paper should be compared. Moreover heat capacity of paper and water are different. This assumption requires more commentary.
6. Chapter III.Use of equation (1) for modeling the temperature distribution in a chilled beer bottle requires a broader comment. Water evaporates on the surface of a wet bottle. At the beginning of Chapter III, the authors do not comment on the adopted simplification and the used alternative solution.
7. In the description of Figure 4, enter the numbering a, b, c, etc. This will facilitate the interpretation of the figure
8. In the conclusions, it can be noted that dry cooling forces a greater temperature difference between the final temperature of the beer and the air temperature. In the case of evaporating cooling, the wet bulb air temperature level is important. This allows cooling at higher evaporation temperatures and dry air temperatures.
9. It should be clearly emphasized that the limitation of the benefits of evaporative cooling in this case may be the still

liquid in the bottle.

Summary:

Despite the above comments, taking into account the nature of the journal, I recommend the article for publication. Please respond to the above comments.