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

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Potential competing interests: No potential competing interests to declare.

This work is concerned with cooling of a hot beer by wrapping it with a wet-towel and calculating how the wet-towel reduces the cooling time in a freezer. Experiments are conducted which are ultimately supported via theoretical considerations taking into accout Newton's law of cooling, Fourier's radial heat conduction and full numerical simulations. Results clearly indicate that rather than towel, increasing advection by placing beers near the freezer fan reduced the cooling time. This is expected since advection assists heat transfer from hot to cool environment.

The work is certainly recommendable for publication in the Qeios, though its prime level is mainly for undergraduate students. The following should be considered for improving the draft;

A) - A few typos are observed throughout.

B) - It is better to tabulate the parameters used in the experiment on a Table.

C)- High, low, and no-advection conditions should be quantified, in place of writing far and close to the freezer's fan.

D) - In the left column, we see the steady cooling of the beers in each of our experimental conditions. Is it true to write "steady"?

E) - My main concern is that air advection truly influences the cooling. Although this is the observed reality, the advection term is not added to the main equations (in the form Uair.T_r), Why? Using convective boundary condition is a solution, but, adding convective terms would help, too. Please refer to the relevant article "Heat transfer from warm water to a moving foot in a footbath (DOI: 10.1016/J.APPLTHERMALENG.2015.12.027)".

F) - It is fascinating to see the experimental evolution of temperature in figure 2 complies with simulations in figure 4. I believe adding advection terms as suggested above would increase the agreement.

H) - Were the real simulations done in each layer with their specific thermophysical features, or, with a mean feature as a single layer? If the first one is preferred, how is the each layer overlapped? Is it sufficient to follow the continuity of temperature at the interfaces?

K) - I believe the bibliography can be made fit better as a research paper, by adding more recent and relevant works from heat transfer periodicals.