Ill. 2. Researcher A. G. Lidén performs a critical AFP measurement by FDP.

garded feasible. Experimental work was therefore found necessary (Ill. 1 and 2). The first approach chosen for the almond density determination was the common sequential weight-volume method (SEWEVO), i.e. first the weight of the almond is determined and thereafter the volume is determined. The density is found as the ratio between these quantities. It was, however, realized that the accuracy of this method with the equipment at hand (a standard balance with a precision of 0.01 g and a 250 ml graded cylinder) would not be sufficient. Instead the so called floating duck principle (FDP) was applied (a duck floats due to a lower density than the surrounding liquid). Two almonds (Kockens soetmandel, food grade quality) were used (Ill. 3). One almond was used untreated and the second almond was autoclaved for 20 minutes at 121 °C, after which the peel was removed. The almonds were placed in 50 ml of distilled water at ambient temperature in a class cylinder, which was magnetically stirred. Small amounts of glucose (Serva, analytical grade) were added and the almonds were intensly observed. The density of the almonds were determined from the almond floating point (AFP), i.e. the density of the liquid when the almonds raised from the bottom.

Table 1. Density determination by FDP.

Density of liquid (g/ml)	Floating status (+ = floating, - = not floating)
1.0	UA-, AA-
1.05	UA-, AA-
1.11	UA+, AA-
1.15	UA+, AA?
1.23	UA+,AA+

UA = untreated almond, AA = autoclaved almond

Ill. 3. The almonds

Results and Discussion

The results are presented in Table 1. As can be seen in the table, the AFP was very different for the two almonds. This has important implications.

The detection of the AFP is not trivial and the possibility of a floating point error must not be neglected. A lot of other things, however, must be.

Conclusions

The floating duck principle has been successfully applied to determine the density of almonds. However, the problem we originally intended to solve was entirely different (a not too uncommon situation), in fact it was the opposite problem, i.e. can we determine the density of the gloegg (and thereby its alcohol content) by using an almond? The answer, in our opinion, is definitely maybe. But it is also our opinion that almonds should be used in connection with gloegg only for their delightful taste, and however tempting it may seem, one should not try to determine the alcohol content of the gloegg based only on the presence or abscence of almonds at the surface of the gloegg. While working with this paper, we have come to realize that more important than the almonds are really the raisins, which we will discuss in a subsequent paper [4].

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