Measurements of meat tenderness are usually done on samples which have been roasted, grilled or cooked in a waterbath. These cooking techniques can be very time consuming. Microwave cookery offers a faster, more convenient approach for tenderness analyses of meat.

The aim of this paper was to compare the tenderness of muscle samples cooked in a waterbath as described by Bouton et al. (1971) with a more convenient and instantaneous measurement on microwaved samples taken immediately after cooking.

The Warner-Bratzler peak shear test (Szczesniak and Torgeson 1965) for meat tenderness was used. Five peak shear forces were recorded on each muscle sample using a Warner-Bratzler shear attachment on an Instron (Model 4301).

In the WB test, blocks of muscle (80±2)g were cut from the centre of 63 thawed lamb m. Longissimus dorsi. They were cooked in a waterbath (80.5°C) for one hour (Bouton et al. 1971). Samples of rectangular cross-section, 1.0 x 1.0 cm and 4 cm along the fibre axis (Müller 1981) were cut from the meat after it had cooled overnight at 5°C and then tested in the Warner-Bratzler shear.

In the MW test, rectangular samples (as above) were cut from the same thawed muscles and eighteen samples at a time were cooked. They were covered with polythene film on a plate, in a Sharp Carousel Microwave oven (Model RO-7200) for 90 seconds at Medium-High (70% microwave power). The samples were tested in the Warner-Bratzler shear once they had reached room temperature, without cooling overnight to complete the faster, more convenient test.

The WB and MW Warner-Bratzler peak shear forces were related according to the linear regression equation: $WB \ (kg) = -0.43 + 0.91 \ (MW \ kg)$, $r = .75$, RSD = .50. The values were in the range 1.3 to 4.4 kg. For the five measurements made on each lamb using both WB and MW methods the MW results were more variable ($>0.05$) (variances 0.09 and 0.15 respectively).

Since there is greater variation using microwave cookery, if this approach is to be used in measuring tenderness then more than five samples will be required if the mean tenderness of each muscle is to be determined within acceptable confidence limits.


*WB = water bath, MW = microwave - ed.

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