APPLICATION OF THE UDY PROTEIN TEST TO QUEENSLAND WHEATS AND FLOURS

Udy (1956, 1957) developed dye ion-binding for the estimation of protein in wheat and flour. This method was applied to Queensland wheat and flours, and during these tests the following procedure was developed, using standard laboratory apparatus.

A 500-mg sample of flour or a 600-mg sample of wheat (ground to pass 0·022-in. sieve) was shaken vigorously with 25 ml of Orange G dye solution (containing 2 mg dye per ml acetic acid pH 2·2)—flour for 3 min, wheat for 30 min. The solutions were centrifuged till clear and an aliquot of each test solution was diluted 20 times with acetic acid pH 2·2.

The optical densities of the diluted test solutions were read against a blank containing 0·04 mg dye per ml. From these densities and a concentration curve, the amount of dye (in mg) bound by the sample was estimated and then plotted against the Kjeldahl protein content (per cent.) of the sample.

Fifty-two flour samples representing nine different varieties were tested and the regression line obtained was

$$(N \times 5{\cdot}7)\% = 1{\cdot}464\,B - 3{\cdot}624,$$

where B = mg dye bound per 500 mg flour.

$$r = 0{\cdot}991$$

$$\text{s.e. of estimate} = 0{\cdot}28 \text{ protein}$$

Thirty-six wheats of six different varieties were used to produce the line

$$(N \times 5{\cdot}7)\% = 2{\cdot}503\,B - 9{\cdot}975,$$

where B = mg dye bound per 600 mg wheat.

$$r = 0{\cdot}983$$

$$\text{s.e. of estimate} = 0{\cdot}35\% \text{ protein}$$

These results are in reasonably good agreement with those obtained by Udy (1956, 1957), who showed that protein analyses using this method correlate fairly well with those of the slower Kjeldahl method.

REFERENCES

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