TRYPSIN INHIBITOR CONTENT OF SOME LOCALLY GROWN PEA CULTIVARS

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INTRODUCTION

Peas *Pisum satium)* like many other legumes contain a range of antinutritive substances which decrease their nutritive value (Savage & Deo, 1989). The trypsin inhibitor content of peas is one-tenth the level found in soya beans *(Glycine max)* and is similar to that in field beans *(Vicia faba)*(Hove & King, 1979; Valdenbouze *et al.*, 1980.) The trypsin inhibitor content depends on pea type; wrinkled-seeded types have less trypsin-inhibitor activity than smooth seeded peas and spring types on average, have less than winter types.

METHODS

Cooking at 100 °C completely destroyed the trypsin inhibitor in all the peas tested (Table 1). This contrasts with the data for lentils (Savage, 1988). Ttrypsin inhibitors in lentils are resistant to normal cooking processes but they are degraded by pressure cooking at 121 °C for 30 minutes.

RESULTS AND DISCUSSION

In general the trypsin inhibitor content of the pea cultivars in this study (Table 1) is comparable with published figures for New Zealand cultivars (Hove & King, 1979; Johns, 1987). They are comparable and low, when compared to the wide range of values in the world literature (Savage, 1988).

While the trypsin inhibitor content of peas is insignificant in human nutrition where they are generally cooked prior to consumption, its effect when fed raw may be significant (Johns, 1987). Johns (1987) showed that there was a close, but non-linear relationship between the trypsin inhibitor content peas and the pancreatic weight of meat chickens fed rations containing 80 % peas.

The addition of methionine to the pea-containing rations markedly improved intake in all cases. This suggests that methionine is directly involved in reducing the effects of the negative growth factors in pancr eatic enzymes which are bound by the trypsin inhibitors in seeds, are particularly rich in the sulphur amino acids, methionine and cystine. Addition of methionine would counteract this effective loss of methionine.

Table 1: Trypsin inhibitor content of raw and cooked peas grown in Canterbury (U/g).

Cultivar	Raw	Cooked
Huka	49.0	0
Pania	26.0	0
Rovar	0.0	0
Whero	71.0	0

As trypsin inhibitors interfere with protein digestion in animals, it is not surprising that in Deo's (1987) work the true digestibility of pea protein was significantly improved by cooking each of the pea varieties.

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