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5-ALKYL RESORCINOL CONTENT OF TRITICALE GRAIN

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The group of 5-n-alkyl resorcinols with odd-numbered side chains of 15-23 C atoms has been identified as a factor limiting both intake levels and growth rates in animals fed diets with a high cereal rye content (Wieringa 1967). Although alkyl resorcinols have been isolated from both wheat and rye, levels in rye are consistently 2- to 4-fold higher than those in wheat (Munck 1972; Verdeal and Lorenz 1977). Munck (1972) reported that Triticale, an interspecific hybrid of cereal rye (Secale cereale) and wheat (Triticum) contains intermediate levels of alkyl resorcinols. Hulse and Laing (1974) suggested that the alkyl resorcinol content of triticale is influenced by both genetic and environmental factors.

Alkyl resorcinol content was determined in eight advanced triticale cultivars which have been selected for high yield and N-content grown at seven locations in South Australia. Alkyl resorcinols were extracted by shaking finely ground samples of the grain in acetone for 16 h. The fluorometric procedure of Verdeal and Lorenz (1977) was used to determine alkyl resorcinols; 5-pentadecyl resorcinol was used as the standard reference compound.

The alkyl resorcinol content of different cultivars ranged from 0.065 to 0.163% (dry weight basis). The lower values are similar to those found in Warimba wheat grown at the same sites, while the higher values are comparable with those found in South Australian rye and with those reported by Munck (1969). The variation within a single cultivar grown at different sites was as high as 0.075%-0.148%, thus confirming a marked environmental influence on alkyl resorcinol content.

Wieringa (1967) found that alkyl resorcinol content of rye decreased with increasing 1000 kernel weight of the sample. No significant correlation with 1000 kernel weight was found with these triticale samples; however, a significant negative correlation occurred between yield and alkyl resorcinol content with grain from higher yielding plots exhibiting lower alkyl resorcinol content.

Madl and Tsen (1974) questioned the nutritional importance of alkyl resorcinols and suggested that poor growth on some lines of triticale may be due to high trypsin inhibitor levels. Feeding tests of these cultivars with widely differing levels of alkyl resorcinols should allow the clarification of the practical importance of these compounds in feeds. Screening for alkyl resorcinol content may then prove to be useful in the selection of triticale lines with high nutritive value. It is important, however, to screen samples grown under a variety of environmental conditions since wide variations can occur within as well as between cultivars.

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