Purification and characterisation of a chymotrypsin inhibitor from perennial ryegrass seeds.

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Genes encoding proteinase inhibitors have been used successfully as traits which can be incorporated into agronomically-desirable crop plants to confer field resistance to insect pests. A number of proteinase inhibitors have been purified and characterised from a variety of plant sources. While there is information concerning inhibitors from legume seeds there is, as yet, very little known about the distribution or specificity of these proteins from grass seeds.

We have purified a serine proteinase inhibitor from *Lolium perenne* (cv. Ranui) using a combination of acid and heat denaturation, followed by gel filtration chromatography.

The inhibitor demonstrates kinetics consistent with a chymotrypsin inhibitor with no detectable trypsin inhibition activity. Gel filtration suggest a molecular weight for the native protein of ca. 20,000 daltons, while SDS-PAGE reveals a hetero-dimer with subunits of ca. 10,000 and 11,000 daltons, each with detectable chymotrypsin inhibition activity (suggesting that the native inhibitor may have two binding sites). These results, along with further characterisation of the inhibitor are presented.