SUMMARY OF PRESENTATIONS ON CHEMICAL COMPOSITION AND ANALYTICAL METHODS

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Section IV contained some 36 contributions concerned with chemical composition and analytical methods. The papers and posters were generally of a high standard, represented many significant advances since the 6th Congress in Paris and elicited considerable discussion both during, and beyond, conference sessions. For obvious reasons it is not possible to comment on all of the presentations in any detail.

Although the primary product from oilseed rape is the oil there have been relatively few contributions covering this area. Exceptions were papers and posters concerned with topics such as improved oil quality and analytical methods for pigments such as chlorophyll (in seeds and in oil). These are obviously very important aspects in relation to marketing a premium produce such a rapeseed oil. In the face of the current general move away form the use of synthetic antioxidants a particularly interesting presentation described the role of natural antioxidants in rapeseed oil. This may be particularly relevant to the current debate about the nutritional advantages of medium linolenic oils.

The antinutritional properties of some components of rapeseed meal has over the years encouraged many studies of the content and chemistry of phenolics, choline enters, phytates and glucosinolates and this was again apparent at this meeting. Methods were described for the analysis of sinapine and other phenolic compounds using the rapid spectral detector as well as a comparitive study of sinapine levels in 161 Brassica cultivars. Such studies are of relevance in the context of taint in the meat, milk and eggs of livestock and poultry fed diets containing rapeseed meal.

A number of papers and posters described the latest progress in the analysis of glucosinolates and these covered simple, rapid tests to refinements of more sophisticated methods such as high performance liquid chromatography (HPLC) and gas chromatography (GC). The general move towards "double zero" glucosinolate rapeseed in Europe has

encouraged the development of rapid methods for glucosinolate analysis in addition to methods which will quantitate all rapeseed glucosinolates.

Optimal procedures for HPLC analysis of glucosinolates have been described and in another paper the results of a recent international collaborative study were presented. A further method based on the HPLC of crude glucosinolate extracts provides the possibility of a test which although much quicker is still capable of quantitating individual glucosinolates.

It is encouraging to note several posters describing preliminary studies of the application of near infrared reflectance spectroscopy (NIR) in the analysis of rapeseed. This approach and the technique of X-ray fluorescence spectroscopy (also described in a poster) are possibly the only methods likely to meet the requirements of industry for very fast (3-5 min) methods. NIR is being tested on whole seed and such a non-destructive technique would be invaluable to the seed breeder. However, further work is necessary before these methods can reliably be used.

The plethora of different techniques now available for glucosinolate analysis causes some confusion and opinion is divided about the relative merits of each method. It is essential that the potential user of a method should first identify what objective is to be met by the analysis. Speed is a relative term and although glucose release methods (for total glucosinolates) are quicker than GC or HPLC, they are not quick enough for some applications. Methods which give a 'total' figure give no indication of possible contamination of the crop with other cruciferous species. Careful consideration should be given to the choice of method.

Autolytic pathways leading to different glucosinolate breakdown products were described in one poster and posters covering fundamental studies of myrosinase and myrosinase activity will undoubtedly facilitate a better understanding of such processes. Whilst this is a meeting denoted to rapeseed - the signficance of these matters to cruciferous vegetables relishes and condiments should not be underestimated.

In the period since the Paris meeting there have been considerable advances made in the analysis of intact glucosinolates. Since the main

use of the defatted meal is for animals it is perhaps time to shift the analytical emphasis elsewhere towards the analysis of breakdown products, towards an identification of metabolic products *in vivo* and, thereby, to identify in more detail the origins of antinutritional/toxic effects, to monitor processing techniques and, beyond glucosinolates, to examine the levels and factors affecting other deleterious factors.

Such work, properly coordinated with plant breeders, agronomists, processors, animal nutritionists, should not only ensure that the meal attains its maximum nutritional potential, but will undoubtedly ensure that the next meeting in Saskatoon contains as much interesting and relevant science as has this meeting.