

Bioactive transformation products of glucosinolates: a key factor determining the quality of Brassicaceae (e.g. oilseed rape) derived products as lipids/oils, concentrates and isolates of proteins

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It is well known that methods of analyses define and present the opportunities and limitations for the information that can be obtained on the quality of products from oilseed rape and other Brassicaceae plants. Details concerning chemical composition do not give any factual information on quality related issues. To obtain such information it is as a minimum necessary to have data on the constitution or structures of native individual compounds and the stabilised transformation products formed from them. In several cases it is also necessary to have data on the configuration or stereochemistry of the actual compounds, as this information can be needed to explain the relation between structures and properties of actual compounds relevant for product quality.

Glucosinolates are of special interest in relation to quality of Brassicaceae crops including oilseed rape. Nearly 20 different glucosinolates were isolated and purified before they were tested at different concentration levels in standard diets (\pm myrosinases) to study their potential physiological effects. Appreciable differences in effects were observed for structurally different glucosinolates. It was also shown that intact glucosinolates can be absorbed from digests in the intestine and pass through the intestinal tissue by facilitated transport.

The compounds produced as transformation products of glucosinolates have most often much higher bioactivity than the intact glucosinolates. These transformation products exhibit much more variation in their biological effects following differences in their structures than what is found for the intact glucosinolates. The effects vary from nutritional and health beneficial to antinutritional or toxic effects depending on their concentration in the diets, as also found for other feed and food components. The thiohydroxamate-O-sulphomates and isothiocyanates are reactive intermediates in the transformation of glucosinolates into more bioactive components. The degree and types of such transformations are closely linked to the type of starting material, to storage and processing conditions.

It is therefore of outmost importance to have opportunities for the not only qualitative but also quantitative determination of the more stable products that

affect product quality. This is the case for compounds of lipophilic/oil soluble products as found in the oil and other lipid products, as well as for amphiphilic and hydrophilic products found in the dietary fibres and protein products. The present work has focused on determining the possibilities of analytical controlled progress in production of added value products from Brassicaceae, especially oilseed rape, without the serious quality problems caused by glucosinolates and of glucosinolates derived products.