

Antioxidants from grape by-products

In agricultural areas, crops such as grapes and olives generate huge amounts of by-products. Millions of tonnes of grapes are processed by the wine industry. An estimated 13% of processed grapes correspond to the by-product after pressing, consisting mainly of skins and seeds. Grape skins and seeds are rich sources of health-promoting polyphenols, including flavan-3-ols of different degrees of polymerization known as proanthocyanidins. Oligomeric proanthocyanidins, as well as other polyphenols, are potent free radical scavengers useful as preventive agents against cancer, cardiovascular diseases, and premature ageing. Currently, a variety of health-promoting products obtained from grape by-products are on the market. The products of grape origin include ground dried skins and extracts obtained from skin and/or seeds.

Torres and Bobet from Spain studied the recovery of new antioxidant product obtained by acidolysis of a polymeric proanthocyanidin fraction of white grape pomace in the presence of cysteamine. They obtained new products with potential application as antioxidants from otherwise useless proanthocyanidin polymers and cysteamine. The new molecules can be easily isolated from complex mixture of plant material by cation-exchange chromatography through the introduction of an amine fraction. As an example, the 2-aminoethylthio derivatives of flavan-3-ols have been prepared, isolated, and purified from a residual fraction generated during the process of extraction of oligomeric proanthocyanidins from grape pomace [Torres & Bobet, *J Agric Food Chem*, 2001, **49**(10), 4627-34].

Fumigants

Indigenous fumigants for preservation of food grains

The antibacterial and antifungal activity of many plant extracts and essential oils is well known. The essential oil turns into fumes when the plant material is burnt. These fumes have long been used in traditional practices for curing diseases and protection from insects and pests. Application of these fumes in the preservation of stored food grains from insects and pests has also been considered better than the use of synthetic or chemical preservatives.

Balaji and Kalyanasundaram at Tamil Nadu Agricultural University and University of Madras studied the possible anti-microbial effect of the selected indigenous fumigants. Among the plants used during experiment the fumes of garlic, turmeric, cowdung cake, gum resin of,

Boswellia serrata Roxb. (*Salai guggul*) and *Ficus religiosa* Linn. (*Pipal*) twigs were found to be powerful and anti-fungal agent against *Aspergillus niger* V. Tiegh and *A. flavus* Link. Garlic fumes and *Salai guggul* were observed to be most effective against, *Bacillus subtilis* Ehrenb. Thus these fumigants could be used as disinfectant for storing food grains (Balaji & Kalyanasundaram, *Indian For*, 2002, **128**, 391-397).

