



## DATABASES FOR FLAVONOIDS AND PHYTOESTROGENS.

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Flavonoids and phytoestrogens are two of several classes of phytonutrients which have been shown to have important biological activities relative to human health. Over four thousand flavonoids have been identified and characterized in nature, primarily in the plant kingdom. Fortunately for those of us working in the field of food composition, only a small percentage of this number are prominent in the foods we commonly consume. There are six subclasses of flavonoids ranging from anthocyanidins to flavonols. Within each subclass there are two to five basic (aglycones) flavonoids which are prominent in the foods we eat. The data on the flavonoid content of foods is very limited. Most have been generated as part of horticultural or food science studies which have investigated only one or two subclasses of flavonoids in a particular fruit, vegetable or other food. We have formed a collaboration with scientists at the USDA Nutrient Data Laboratory as well as at Tufts University to collect the available food flavonoid data and assemble it into a database of values which will be made available on the Internet.

Microbial action in the gastrointestinal tract produces compounds with estrogenic activity (phytoestrogens) primarily from two classes of phytonutrients, isoflavones and lignans. Isoflavones, characterized by daidzein, genistein, glycitein and their conjugates, are found primarily in soybeans and soy-based foods. Several laboratories have developed analytical procedures for measuring these compounds in foods. We have been collaborating with one of these laboratories, Dr. Patricia Murphy at Iowa State University, to measure the concentrations of isoflavones in a variety of soy-foods sampled in several metropolitan areas of the U.S. In addition we have extended our collaboration to include scientists at the USDA Nutrient Data Laboratory who are collecting published data on the isoflavone levels of soybeans and soy-foods. These data will be combined with the analytical data from Dr. Murphy's laboratory to form an isoflavone database which will be available on the Internet during mid-1998.

Although over four hundred lignans have been identified and characterized in nature, only two, secoisolariciresinol (Seco) and matairesinol (Mati), appear to be precursors to compounds with estrogenic activity. These phytonutrients are prevalent in flaxseed meal, rye flour and selected other oil seeds, and to a lesser extent in cereal brans, whole cereals and legumes. The currently available analytical procedures to measure Seco and Mati in foods are very laborious. As a result, we are conducting research to develop simplified techniques so that these important phytonutrients can be quantified in commonly consumed foods and appropriate databases subsequently assembled.