

Use of the Renewed Database Seed Oil Fatty Acids (SOFA) as Tool for Lipidomic Profiling of Wild Plant Seeds

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More than 40 years information about the fatty acid composition of wild plant seeds was collected from appropriate pharmaceutical, botanical and chemical literature by the Max Rubner-Institute (MRI), Federal Research Institute of Nutrition and Food (former Institute for Chemistry and Physics of Lipids). Until December 31, 2008 the database was available free of charge in the internet, before the platform had to be taken from the server in order to improve the system regarding the demands on a modern database. In 2011, in cooperation with the company *Comicon GmbH (Hamburg, Germany)*, specialized on programs with chemical background, and by financial support of the German Federal Ministry for Nutrition, Agriculture and Consumer Protection supplied by the Fachagentur Nachwachsende Rohstoffe e. V. a new database system was created with a new user interface and new search algorithms (FKZ: 20014408). The database contains about 580 different fatty acid structures, more than 7,000 plant species, and about 130,000 individual percentage data for fatty acids occurring in plant seeds. These data are distributed on more than 18.000 tables with results of the analysis from seeds. Searches are possible by plant genus, species, and family; for fatty acids by trivial name, chemical name, CAS-number or structural element (Delta-Notation). In the database, one can also search for fatty acid structures or partial structures such as 18:3*, *OH*, *9a* (= for an acetylene in position 9), or *5t,9c* (for 5-trans,9-cis....) etc., and find the occurrence, percentage level and distribution of such structures in the plant kingdom. The database should be very useful for chemists, biochemists and food scientists as well as for botanists to find information not only for renewable resources and "green" chemistry, but also for gene technology, for understanding the enzymes of fatty acid biosynthesis and their mutations during the evolution of plant families and species, for plant chemotaxonomy and for systematic and phylogenetic botany.