Lipid of the Month: December 2009

Anacardic acid 15:3

Anacardic acid is a collective name for naturally occurring salicylic acids substituted with C_{13}, C_{15} or C_{17} alkyl chains with different degrees of unsaturation. They are present in high concentration in seeds of plants belonging to the *Anacardiaceae* family, notably *Anacardium occidentale*, the cashew. Thus, cashew nut shell liquid (CNSL) contains approximately 70% anacardic acids as well as 18% of their decarboxylation products, called cardanols. Other sources of anacardic acids are leaves from the *Ginkgo biloba* tree and exudates of trichomes of *Pelargonium* plants.

Isolation of anacardic acids is usually performed by HPLC (1,2), and this technique as well as GLC and capillary electrophoresis can be used for analysis of mixtures of the acids (3,4). Biosynthesis of anacardic acids starts with C_{14} - C_{18} fatty acid acyl chains (5) which appear to undergo further elongation, cyclization and aromatization by a polyketide pathway (6).

Interest in anacardic acids partly stems from their lethal effect on gram-positive bacteria including methicillin-resistant *Staphylococcus aureus* (MRSA) (7). In *Pelargonium* plants, anacardic acids are important for the resistance to insect and aphid pathogens. Additionally, anacardic acids exhibit antitumor activity and sensitize tumor cells to ionizing radiation (8). Anacardic acids inhibit histone acetyltransferase (8-10) and suppress expression of nuclear factor-κB-regulated gene products leading to potentiation of apoptosis (10). Other enzymes inhibited by anacardic acids include tyrosinase, xanthine oxidase, lipoxygenase and cyclooxygenase.

Anacardic acids supplied by Lipidox include the pentadecatrienyl and pentadecenyl derivatives, *i.e.* 6-[8(*Z*),11(*Z*),14-pentadecatrienyl]-salicylic acid (O-1503) and 6-[8(*Z*)-pentadecenyl]salicylic acid (O-1501).

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