Aloin

Aloin, also known as barbaloin, is a bitter, yellow-brown colored compound noted in the exudate of at least 68 Aloe species at levels from 0.1 to 6.6% of leaf dry weight (making between 3% and 35% of the total exudate) (Groom & Reynolds, 1987), and in another 17 species at indeterminate levels. It is used as a stimulant-laxative, treating constipation by inducing bowel movements.

The compound is present in what is commonly referred to as the aloe latex that exudes from cells adjacent to the vascular bundles, found under the rind of the leaf and in between it and the gel. When dried, it has been used as a bittering agent in commerce (alcoholic beverages) [21 CFR 172.510. Scientific names given include Aloe perryi, A. barbadensis (= A. vera), A. ferox, and hybrids of A. ferox with A. africana and A. spicata.]. Aloe is listed in federal regulations as a natural substance that may be “safely used in food” when used “in the minimum quantity required to produce their intended physical or technical effect and in accordance with all the principles of good manufacturing practice.” This food application is generally limited to use in quite small quantities as a flavoring in alcoholic beverages and may usually be identified only as a “natural flavor.”

Zhong et al., studied the protective effects and underlying mechanisms of aloin on d-galactose (d-gal) induced ageing mice.

The results demonstrated that chronic administration of d-gal (150 mg kg-1) in mice caused spontaneous and cognitive impairments, as determined by open-field test and Morris water-maze test. Aloin treatment significantly ameliorated histopathological damage, attenuated the microglia activation and reduced levels of inflammatory mediators, such as tumor necrosis factor-α (TNF-α), interleukin-1β (IL-1β) and IL-6 in the hippocampus. Moreover, it effectively suppressed the level of reactive oxygen species (ROS) and increased antioxidant enzymes activities. Further data showed that these protective effects were accompanied by inhibition of the activation of nuclear factor kappa B and the phosphorylation of p38 and ERK. In conclusion, the present study suggests that aloin can ameliorate d-gal induced oxidative stress, cognitive impairment and inflammation, possibly via mediating the ERK, p38 and NF-κB signaling pathways [1)].

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Zhong J, Wang F, Wang Z, Shen C, Zheng Y, Ma F, Zhu T, Chen L, Tang Q, Zhu J. Aloin attenuates cognitive impairment and inflammation induced by d-galactose via down-regulating ERK, p38 and NF-κB signaling pathway. Int Immunopharmacol. 2019 Apr 5;72:48-54. doi: 10.1016/j.intimp.2019.03.050. [Epub ahead of print] PubMed PMID: 30959371.