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Christensen, Lars Porskjær; Kobæk Larsen, Morten; El-Houri, Rime; Fretté, Xavier; Baatrup, Gunnar

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Polyacetylenes of the falcarinol type: A promising new class of neutraceuticals and lead compounds for the development of anticancer drugs

Christensen LP1, Kobaek-Larsen M2,3, El-Houri RB3, Fretté X1, Bastrup G2,3

1Department of Chemical Engineering, Biotechnology and Environmental Technology, University of Southern Denmark, DK-5230 Odense M, Denmark, 2Department of Clinical Research, University of Southern Denmark, DK-5000 Odense C, Denmark, 3Department of Surgery A, Odense University Hospital, DK-5700 Svendborg, Denmark

Aliphatic C17-polyacetylenes of the falcarinol type such as falcarinol (FaOH) and falcarindiol (FaDOH) are found in many food and/or medicinal plants of the Apiaceae and Araliaceae families [1]. Several in vitro studies have shown that falcarinol type polyacetylenes are highly cytotoxic and possess anti-inflammatory activity [1]. In addition, it has been shown that that synergistic interaction between bioactive polyacetylenes of the falcarinol type such as FaOH and FaDOH may be important for their bioactivity [2]. The anticancer activity of FaOH and FaDOH isolated from carrots have recently been demonstrated in an azoxymethane (AOM)-induced rat model where dietary amounts of FaOH and FaDOH in the rat diet reduced the number of neoplastic lesions with up to 83% as well as the growth rate of the polyps suggesting a preventive effect of FaOH and FaDOH on the development of colorectal cancer [3]. The molecular mechanism of falcarinol type polyacetylenes underlying their anticancer activity is still not known but is most likely related to their alkylating properties, leading to the inhibition of proteins such as COX and NF-κB that plays a central role in the development of cancers [1]. Based on the present available in vitro and in vivo data of polyacetylenes of the falcarinol type it appears that these natural products are a new promising class of neutraceuticals and lead compounds for the development of anticancer drugs.