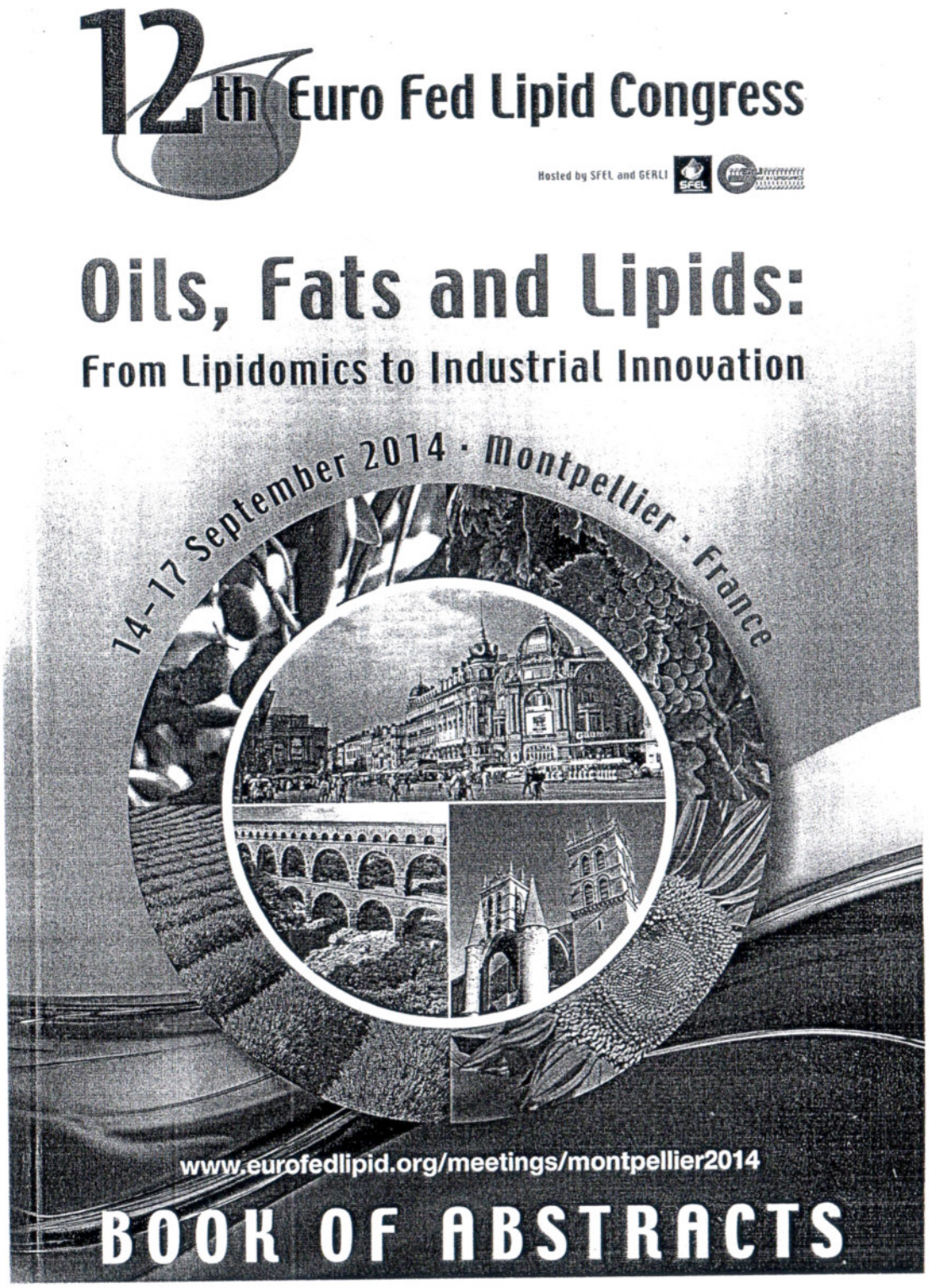

Arylmethyl Derivatives of Meldrum`s Acid – a New Class of Antioxidants

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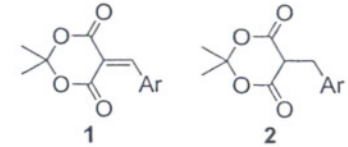
Malonates (e. g., di-2-ethylhexyl 4-hydroxy-3,5-dimethoxy-benzylmalonate and diethylhexyl syringylidene malonate) and lactones (e. g., benzofuranone derivatives) are used as antioxidants and powerful radical scavengers. The only derivatives of Meldrum`s acid described as potential antioxidants are 2,2-dimethyl-5-arylidene-1,3-dioxane-4,6-diones **1** [1] - these compounds act as phenolic type antioxidants.

Herein, we present a new class of carbon centered radical scavengers – arylmethyl derivatives of Meldrum`s acid **2**. We found out that the substituents in the aromatic moiety were not crucial for antiradical activity of compounds **2** – all of them demonstrated high or even very high inhibition of the free radical DPPH. It seems that the reaction of DPPH with compounds **2** proceeds as SPLET process. The role of α-CH (between both ketogroups) in the antiradical activity of compounds **2** was approved by the isolation of the reaction product and by the appraisal of the influence of the substituents at C-5 of the 2,2-dimethyl-1,3-dioxane-4,6-dione. The compounds **2** demonstrated lower inhibition of galvinoxyl (in comparison with DPPH).



1 **2**

Few of the compounds **2** were tested as antioxidants. It was observed that the oxidative stability of rapeseed oil methyl esters (RME) can be increased up to 5 times (the oxidation processes were characterized by peroxide values). RME samples containing compounds **2** demonstrated higher oxidative stability in Rancimat test than RME without additive.

Corresponding aromatic aldehydes and carboxylic acids have been isolated as autooxidation products of some arylmethyl derivatives of Meldrum`s acid; the plausible mechanism is provided.

1. Sandhu, H. S.; Sapra, S.; Gupta, M.; et al. *Bioorg. Med. Chem.* **2010**, *18*, 5626.