

# Natural Aroma Chemicals: Bioconversion, Isolation and Soft Chemistry

Highlights from the Chemical Sources Association (CSA)/Society of Flavor Chemists (SFC) meeting

Natural aroma chemicals took center stage during a presentation by Axxence Aromatic GmbH (Emmerich, Germany) commercial director Ron Honing and technical director Peter van der Schaft during the CSA/SFC meeting in Newark, New Jersey, on February 16. The discussion drew on expertise from research and manufacturing activities carried out at Axxence Slovakia (previously Monoprix).

Van der Schaft's presentation began with a brief history of Axxence followed by an explanation of the new EU natural flavor standard, EC No.1334/2008. He spoke from his personal involvement as a member of the European Flavour Association working group in the preparation of the recent guidance document on natural processes and listed all of the current acceptable processes according to the new EU rules.

**Bioconversion:** The presenters discussed several technology platforms including bioconversion, which utilizes enzymes in agricultural plants to manufacture high-purity *trans*-2-hexenal, a molecule that imparts a sharp, fresh green and slightly spicy nuance to many flavors. Further isolation methods are used to obtain the similarly high-impact green, spicy molecules *trans*-2-hexenol and hexanal.

**Isolation technology:** Isolation technology, the speakers explained, can be used to obtain such molecules as 2,4-decadienal and 1-octen-3-ol from vegetable sources, in addition to an array of pyrazine mixtures and  $\delta$ -lactones. In the pipeline in this category is the much anticipated natural rose oxide, to be introduced in the coming months.

**Soft chemistry:** Van der Schaft noted a third technology platform, soft chemistry, which involves the addition of natural sulfur to some of the molecules mentioned earlier. This process results in the high-impact tropical notes of 3-mercaptohexanol, 3-mercaptohexyl acetate and 3-mercaptohexyl butyrate. Other tropical molecules in the pipeline include 3-methiohexanal, ethyl 3-methylthiopropionate and the citrusy 4-mercapto-4-methyl-2-pentanol. Some others that are currently available and useful for savory meat notes include 2-methyl-4-propyl-1,3-oxathiane, 2-methyltetrahydro-3-furanthiol and thialdine.

Special thanks to Christine Daley for her reporting: [christine@aromalink.net](mailto:christine@aromalink.net).

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From left, Deborah Osborne (Kraft), Christine Daley (AromaLink) and Peter van der Schaft (Axxence Aromatics)



From left, Stephen Ruocco (McCormick & Co.), Ken Kraut (IFF) and Anthony Johnson



Lindsay Bond, left, and Polly Barrett (both Kalsec)

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