

Basic knowledge of plant chemicals provides foundation for solving food-related problems

April 28 2014



Credit: AI-generated image ([disclaimer](#))

Solving the world's major food-related problems, like hunger, overweight and obesity, will require a great deal more knowledge of the individual plant chemicals. These plant chemicals are the key to unlocking the hidden characteristics of crops such as higher yields per plant and better quality. That is what Professor Robert Hall stated at his

inauguration as professor by special appointment in Plant Metabolomics at Wageningen University on 24 April 2014.

You would be forgiven for thinking that '[metabolomics](#)' sounds complicated. 'But it's nothing more than a set of tools, not a goal in and of itself,' said Professor Robert Hall in his inaugural speech "Plant Metabolomics and the Golden Age of Dutch painting". In the professor's opinion, the value of this technology is in the data which it generates. This data involves information about [plant chemicals](#) of various sizes, like flavours and odours, toxins and medicinal substances, perfumes and [natural insecticides](#), or information about chemicals linked to [seed germination](#). "Science is built up with facts, as a house is with stones. But a collection of facts is no more a science than a heap of stones is a house," Hall stated, quoting the French philosopher Henri Poincaré. The art of the biologist is to interpret the data, thereby ultimately making applications possible.

The area of application for metabolomics is very wide - almost universal. The chemicals in the plants may be nutritious for humans, or have medicinal properties - as evidenced by the 25% of medicines with a bioactive substance which was originally detected in a plant. Many plant substances have a physiological effect of some kind on other organisms. For instance, the scent of flowers attracts people as well as insects. The headache remedy used in the Middle Ages, chewing on willow bark, was so effective because (as we now know) willow bark contains salicylic acid, in a very similar form to the salicylic acid found today in aspirin. Furthermore, a better understanding of the biochemistry of complex issues such as how fruit ripen can be of benefit to breeders and growers.

Global scale

Agricultural products must be adapted to the diversity of people and cultures around the world. For instance, in Pakistan people prefer

basmati or other long-grain rice types, while in S.E. Asian countries shorter rice varieties are preferred. Taste varies in different cultures as well. The fragrant basmati and jasmine rice varieties each have their own 'fans'. Metabolomics helps us understand the reasons behind these differences. With the help of metabolomics, it was possible to create two new varieties of rice which combine high yields with good flavour. These varieties will soon be placed on the market in Laos.

Provided by Wageningen University

Citation: Basic knowledge of plant chemicals provides foundation for solving food-related problems (2014, April 28) retrieved 20 June 2024 from <https://phys.org/news/2014-04-basic-knowledge-chemicals-foundation-food-related.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.