Natural deep eutectic solvents and their application in natural product research and development

Dai, Y.

Stellingen

Behorende bij het proefschrift

Yuntao Dai

1 Natural deep eutectic solvents (NADES) occur as the third liquid in nature where they play an important role in the cell factory's metabolism and physiology (this thesis).

2. The NADES offer novel possibilities for tailor-made solvents for a wide variety of applications in the isolation and (biomimetic) synthesis of natural products as well as for the formulation of botanicals (this thesis).

3. Water can be part of NADES and plays a key role in overcoming the difficulty of high viscosity of NADES in industrial applications (this thesis).

4. Interaction between molecules, e.g. hydrogen bonding, changes the character of the molecules involved, which plays an important role in the biochemistry of life (this thesis).

5. Results of *in vivo* pharmacological activity tests are very meaningful in studies on traditional medicines but require a systems biology approach to identify the targets involved.

6. A combination of NMR and MS spectra may be a good solution for chemical profiles or chemical barcoding of herbal medicines.

7. Signals of which the intensity does not change in a metabolomics analysis should be considered with care as this may be due to saturation of a compound in the extraction solvent, whereas in fact large variation may exist.

8. In mathematics 1+1=2, in nature it can be more than 2 through synergy, which in fact is the basis of life.

9. Glazing food is a common process in cooking, this process may serve several goals: the extraction of the flavor, to retain water and to avoid oxidation of metabolites.

10. In science one may translate, Mahatma Gandhi's quote "trace of practice is more than tons of preaching", into "experiments are worth more than reading tons of papers".

11. In life sciences different disciplines may address the same questions, however often without proper interdisciplinary communication about the results.

12. Life is an intricate network of interactions between all organisms ruled by the availability of basic chemical elements (e.g. O, H, C, P, N, S, Ca, Mg, Mn, Fe), water and light.