Emulsifying properties of high amylopectin starch derivatives.

Emulsions are heterogeneous systems which consists of two immiscible liquids (usually oil and water) with one of the liquids dispersed in another as small spherical droplets. Examples of food emulsions are mayonnaises and beverage emulsions (soft drinks). To make stable emulsions an emulsifying agent must be present. The emulsifying agent facilitates emulsification and promotes emulsion stability. Emulsifying agents can be surface active materials, but it can also be finely divided solids. The most important physical property of an emulsion is its stability, and can be related to different phenomena – creaming, sedimentation, coagulation and droplet coalescence.
Octenyl succinate anhydride treated starch (OSA-starch) is well known as an emulsion stabiliser in food systems. In a recent CAP project (Lars Nilsson, B. Bergenståhl) the emulsifying properties of OSA starches has been investigated. One general observation was that OSA modified waxy barley works better as an emulsifier than OSA modified potato starch. The objective of this project is to compare high amylopectin OSA starches from different botanical sources regarding emulsifying properties. Are there for instance differences in emulsifying properties when we compare zero amylose waxy barley and waxy barley with approx. 5% amylose content?

Proposed work
OSA derivatives of the different starches will be evaluated regarding emulsifying properties. The emulsions will contain oil, water and OSA starch.
There are two different aspects that can be studied:

- How well do the products facilitate emulsification?
  This will be studied by preparing emulsions with different starch: oil ratios at constant conditions and measuring the particle size by laser diffraction.
  A good emulsifier will promote the formation of small particles.
  Another way to measure is to continuously add the oil during emulsification until the emulsion breaks. This gives the emulsion capacity expressed as the amount of oil held per gram of sample.

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