Urgent Technology Request

Client Ref. JBP

We are seeking ingredient and/or process technology to reduce the loss of flavour volatiles from ingredients in a snack food base during manufacture (drying / cooking)

Ingredients

The snack food base contains fresh cooked potato with other ingredients such as vegetables, spices, herbs, legumes, dairy, non-meat protein. Whilst some cooked flavours are created in the cooking process through maillard type reactions, other flavour volatiles are lost (e.g. terpenes). Examples of ingredients known to readily lose flavour volatiles include:-

Delicate herbs (e.g. rosemary, thyme) Fragrant spices (e.g. lemongrass, cinnamon etc) Other volatiles may include Aldehydes, Alcohols, Esters, Ketones & Phenolics

Processes

The freshly cooked potato is mashed and then blended with a combination of wet and dry ingredients, plus oil, into a fresh dough mixture that is shaped and deposited onto a conveyor belt. It then moves through the cooking processes:-

1st stage - Atmospheric microwave dryer
- Rapid dry at low temperature to create the texture of the product
- Moisture content is reduced from 65-85% to ~15% moisture within 120 seconds
- Monolayer of product on belt
- Hot air (50°C) blown across product to remove moisture generated by process
- Product temperature is between 100-120°C

2nd stage - Hot air dryer
- Hot air (~120°C) dryer to complete cooking process
- Moisture content further reduced from ~15% to 2% moisture content in around 20 minutes
- Product deep bedded at 10cm depth

Current causes of flavour volatile loss

The majority of flavour volatiles of relevance for a positive consumer experience are lost during the 1st stage of drying. Mechanisms of loss include:

(i) co-distillation through steam generation (Hypothesis)
(ii) heat degradation (e.g. flash-off at a certain temperature or time-temperature)

Potential solutions

- Rapid, on-line analytical methodologies which can identify and quantify the lost flavour volatiles, e.g. by sampling the oven exhaust streams online, and / or providing feedback control
- Addition of ingredients (wet or dry) to the snack base at the ñingredient addition & mixingòstep which directly or indirectly impact retention of flavour volatiles - process aid or declarable ingredient as long as not perceived as artificial
    - Can be sacrificial (i.e. not present or changed in finished product)
    - Can reduce reaction rates of volatile loss

We are searching for devices, methods, chemistry or physics relating to reduction of consumer-relevant flavour volatile loss during rapid dehydration of a potato-based composite snack. We would therefore be interested in receiving introductory (non-confidential) information on any technical expertise, research work, or commercial solutions (ready to use, or in development) that could assist our client. Please send details to: Elaine Rhodes, Operations Manager. Thank you!

Strategic Allies Limited
The Red and White House, 113 High Street, Berkhamsted, HP4 2DJ, UK.
Tel. +44 (0)1442 860634. Email: opportunities@strategicallies.co.uk