

Maillard reaction in milk powder

Key words: Factor structure, Randomized blocks with two-way full factorial treatment structure, repeated measurements.

Description

In an experiment with production of milk powder the effect of water activity and temperature on the formation of maillard reaction products was investigated. There were 9 treatment combinations of the two factors and three replicates (blocks) of the experiment giving a total of 27 productions. The factors and levels were: water activity (approx. 0.15, 0.25 and 0.10, coded as 1, 2, 3 in the data set), and temperature (100 C, 110 C, 120 C, 140 C).

The 27 samples were stored and measurements were made after 4, 6 and 8 weeks. The measurements (response variables) were: concentration of maillard reaction products (which may give a bad taste), and sensory evaluation of taste (high = good taste).

Number of observations: 27

Variable	Description
water	Numbered 1,2,3
temp	Values 100,110,120,140
rep	The block factor numbered 1,2,3
maill4, maill6, maill8	Maillard concentration after 4, 6 and 8 weeks
taste4, taste6, taste8	sensory taste score after 4, 6 and 8 weeks

Source

The Royal Veterinary and Agricultural University, Denmark.

Analysis

Randomized block (fixed two-way treatment with interaction, random block) for each of the six variables. Repeated measures analysis for each set of three time repeated measurements.