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The Impact of the Skim Milk Powder Manufacturing Process on the Flavor of Model White Chocolate

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Table S1 Reference materials provided to help assessors to standardize attribute descriptors

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Reference material</th>
</tr>
</thead>
<tbody>
<tr>
<td>sour cream, lactic, cheesy (odor and flavor)</td>
<td>natural yogurt</td>
</tr>
<tr>
<td>cocoa butter (odor)</td>
<td>cocoa butter hand cream</td>
</tr>
<tr>
<td>caramel (odor)</td>
<td>caramel syrup</td>
</tr>
<tr>
<td>brown sugar (flavor)</td>
<td>muscovado sugar</td>
</tr>
<tr>
<td>caramel (flavor)</td>
<td>caramel syrup</td>
</tr>
<tr>
<td>fudge (flavor)</td>
<td>dairy fudge*</td>
</tr>
<tr>
<td>condensed milk (odor and flavor)</td>
<td>evaporated and sweetened, condensed-milk</td>
</tr>
<tr>
<td>creamy (flavor)</td>
<td>cream</td>
</tr>
<tr>
<td>nutty (odor and flavor)</td>
<td>roasted hazelnuts</td>
</tr>
</tbody>
</table>

* Dairy fudge purchased from a UK supermarket was a typical example of a UK fudge, consisting of only sugar, butter and condensed skim milk
Table S2 Mean panel scores (n = 9) for sensory attributes of two types of white chocolate produced using skim milk powders of different heat treatments – high heat (HHCHOC), low heat (LHCHOC)

| attribute             | score | LSD  | P       | S | A | I *
|-----------------------|-------|------|---------|---|---|---
|                       | HH CHOC | LH CHOC |        |   |   |   
| appearance            |        |       |         |   |   |   
| shininess             | 17     | 18    | 9.0     | ns| * | ns
| yellow                | 54     | 34    | 3.5 *** | ***| *** | ns
| odor                  |        |       |         |   |   |   
| sweet                 | 37     | 38    | 7.0     | ns| ** | ns
| vanilla               | 16     | 16    | 6.9     | ns| *  | ns
| caramel               | 22     | 13    | 12      | ns| ns | ***
| evaporated milk       | 32     | 24    | 12      | ns| ns | ns
| cheesy                | 6.4    | 4.5   | 6.5     | ns| ns | *
| cocoa butter          | 16     | 12    | 7.5     | ns| *  | *
| cardboard             | 8.9    | 7.6   | 7.0     | ns| ** | **
| taste                 |        |       |         |   |   |   
| sweet                 | 48     | 47    | 7.2     | ns| ** | ns
| acidic                | 7.8    | 6.9   | 3.4     | ns| ** | ns
| salty                 | 7.0    | 7.3   | 1.3     | ns| ***| ns
| flavor                |        |       |         |   |   |   
| overall flavor intensity | 53  | 43    | 5.5     | **| *  | ns
| vanilla               | 18     | 18    | 3.1     | ns| ***| ns
| fudge                 | 28     | 16    | 11.9    | * | ns | ***
| condensed-milk        | 31     | 23    | 6.3     | * | ns | ns
| cheesy                | 4.1    | 2.2   | 5.3     | ns| ns | **
| cocoa butter          | 15     | 12    | 6.5     | ns| *  | ns
| mouthfeel             |        |       |         |   |   |   
| hardness of bite      | 29     | 42    | 11      | * | ns | *
| speed of melting      | 38     | 33    | 11      | ns| *  | ***
| mouth coating         | 31     | 33    | 8.2     | ns| ** | ns
| smoothness            | 57     | 59    | 6.8     | ns| ***| ns
| grains                | 6.3    | 5.2   | 4.7     | ns| *  | *
| mouth-watering        | 22     | 21    | 4.0     | ns| ***| ns
| fatty                 | 28     | 32    | 10      | ns| *  | ns
| adhesive              | 27     | 26    | 10      | ns| *  | ns
| mouth drying          | 13     | 13    | 5.4     | ns| ** | *
| tongue tingling       | 1.3    | 1.4   | 3.6     | ns| ns | **
| throat catching       | 7.0    | 11    | 8.5     | ns| ns | *
| after-effects         |        |       |         |   |   |   
| sweet                 | 41     | 40    | 6.2     | ns| ** | ns
| salt                  | 5.3    | 5.3   | 2.0     | ns| ***| ns
| acidic                | 6.7    | 5.7   | 3.2     | ns| ** | ns
| mouth drying          | 14     | 12    | 3.0     | ns| ***| ns
| mouth coating after swallow | 19  | 16    | 7.0     | ns| *  | *

*a* Means not labelled with the same letters are significantly different (p<0.05); means of two replicate assessment for each assessor (18 replicates in total).

*b* Least significance difference at p = 0.05.

*c* Probability, obtained from ANOVA, that there is a difference between means; ns, no significant difference between means (p>0.05); * significant at the 5% level; ** significant at the 1% level; *** significant at the 0.1% level; F-ratios for sample and assessor were calculated by comparing the mean square of the effect with the mean square of the sample × assessor interaction; S: significance of samples, A: significance of assessors, I: significance of the interaction (S × A).