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Title of invention:
PROCESS FOR PRODUCING INFANT FOOD PRODUCTS

Patent Proprietor:
Société des Produits Nestlé S.A.

Opponent:
HIPP GmbH & Co. Vertrieb KG

Headword:
Process for producing infant food products/NESTLE

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Inventive step - (no)

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Case Number: T 1225/18 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 21 July 2022

Appellant: (Opponent)	HIPP GmbH & Co. Vertrieb KG Georg-Hipp-Strasse 7 85276 Pfaffenhofen (DE)
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Respondent: (Patent Proprietor)	Société des Produits Nestlé S.A. Entre-deux-Villes 1800 Vevey (CH)
Representative:	Rupp, Christian Mitscherlich PartmbB Patent- und Rechtsanwälte Sonnenstraße 33 80331 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 5 March 2018 concerning maintenance of the European Patent No. 2190309 in amended form.**

Composition of the Board:

Chairman	A. Haderlein
Members:	F. Rinaldi
	N. Obrovski

Summary of Facts and Submissions

I. This decision concerns the appeal filed by the opponent (appellant) against the opposition division's interlocutory decision which held that the European patent as amended met the requirements of the EPC.

II. In its notice of opposition, the opponent had requested that the patent be revoked based on Article 100(a) EPC for lack of inventive step, among other things.

III. The following document is referred to in this decision:

D17: H. Reuter (editor), "Aseptic processing of foods", Hamburg: Behr's Verlag, 1993, 25-43, 59-85 and 125-143

IV. In reply to the statement setting out the grounds of appeal, the patent proprietor (respondent) filed auxiliary requests 1 and 2.

V. The following claims are relevant to the decision:

Claim 1 of the main request, which the opposition division held to be allowable, reads:

"*A process for producing an infant food product comprising a protein ingredient and a vegetable ingredient wherein, in a first stage, a vegetable ingredient is cooked, and a protein ingredient is cooked separately from the vegetable ingredient to provide precooked ingredients, and in a second stage, the pre-cooked ingredients are mixed and, after mixing,*

are submitted to UHT processing to sterilize the product, which product is aseptically filled in containers thereafter,
wherein the protein ingredient comprises a source of protein selected from meat and fish, and
wherein the UHT processing is carried out at a temperature of 130°C to 140°C for a time of 30 seconds to 240 seconds."

In claim 1 of auxiliary request 1, the following feature is added to claim 1 of the main request:

"*wherein the vegetables are cooked for a time of 1 minute to 5 minutes at 85°C to 95°C*".

In claim 1 of auxiliary request 2, the following feature is added to claim 1 of the main request:

"*wherein the vegetables are cooked for a time of 1 minute to 5 minutes at 85°C to 95°C, and*
wherein the meat or fish is cooked separately by frying it or pressure-cooking it for a time of about 10 minutes".

VI. The appellant's arguments, where relevant to the present decision, can be summarised as follows:

D17 was the closest prior art for assessing inventive step. Even if it were accepted that the distinguishing features of claim 1 were the separate pre-cooking of the vegetable and the meat/fish ingredient and the UHT conditions, no technical effect would be shown over D17. The technical problem was to provide an alternative. The solution would have been obvious to the skilled person in view of the common general

knowledge described in D17. Claim 1 of all of the requests lacked an inventive step.

VII. The respondent's arguments, where relevant to the present decision, can be summarised as follows:

Claim 1 of all of the requests involved an inventive step. The closest prior art, D17, did not disclose the combination of separately pre-cooking the vegetable and the meat/fish ingredient, mixing the ingredients and subjecting them to the UHT conditions described in claim 1. It was not possible to provide comparative data over D17. Thus, taking into account the patent's results, which involved a comparison with processing under retorting conditions, was justified. This data showed that the claimed process provided several technical effects. There was no teaching in D17 that the distinguishing features, and in particular the UHT conditions set out in claim 1, would have provided the technical effects identified.

VIII. The parties' final requests were as follows:

The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed (main request) or, alternatively, that the patent be maintained on the basis of auxiliary requests 1 or 2, both of which were filed with the reply to the statement setting out the grounds of appeal.

Reasons for the Decision

1. *Patent*

1.1 The patent relates to an aseptic process for preserving infant food products. The ingredients are processed to the minimum extent necessary so that the distinctive natural colours and tastes of the ingredients are retained after processing (paragraph [0001]).

1.2 Claim 1 of the main request is directed to a process which involves the separate pre-cooking of the vegetable and the meat/fish ingredient and processing at an ultra-high temperature (UHT) for a specified time to sterilise the product (UHT conditions).

2. *Main request - inventive step*

2.1 The opposition division decided that the subject-matter of claim 1 involved an inventive step over D17. The appellant contested this decision. However, the parties agreed that D17 was the closest prior art.

2.2 D17 is an excerpt of selected pages from a handbook on aseptic processing of foods, as indicated by its title. It summarises the common general knowledge in the art of preserving food products and focuses on processes involving UHT. Among other things, it describes the advantages of the UHT process as well as how to implement it. This includes the pre-treatment of food ingredients such as vegetables, meat or fish and the packaging of treated products. On page 69, D17 discloses that UHT processes are widely used in the food industry, for example to sterilise infant food.

2.3 Distinguishing features

2.3.1 The respondent's view was that D17 did not disclose the specific combination of

- the separate pre-cooking of the vegetable and the meat/fish ingredient for the purpose of subsequent UHT processing; and

- the UHT processing conditions of 130-140°C for 30 to 240 seconds for a mix of vegetables and meat/ fish.

2.3.2 The board agrees that these are the distinguishing features of claim 1 over D17.

2.3.3 The respondent further argued that D17 did not disclose the step of mixing the pre-cooked vegetables and meat before subjecting them to UHT processing.

2.3.4 However, the separate pre-cooking of the vegetable and the meat/fish ingredient necessarily implies that these ingredients are mixed before they undergo UHT processing, as is taught in D17. Mixing the pre-cooked ingredients therefore does not represent a further distinguishing feature of claim 1.

2.4 Technical effect achieved

2.4.1 The respondent argued that the combination of features, including the distinguishing features, provided several technical effects, all demonstrated in the patent's experimental section. The alleged effects were:

1) a high retention of thiamine,
2) low furan values,
3) a good cooking value,
4) a good product colour retention, and
5) a good taste.

2.4.2 The patent contains an extensive experimental section. The comparative tests were carried out by comparing conditions "according to the invention" with processing under retorting. The latter apparently involves heating at 121°C for 30 to 60 minutes (patent, figure 1).

2.4.3 The patent's experimental section does not include a comparison with UHT conditions, i.e. the process taught in the closest prior art. Moreover, D17 teaches that UHT processing is associated with many advantageous effects (e.g. figure 2.2-1, pages 25 and 69). These include inactivation of enzymes and micro-organisms and prevention of thermal damage (e.g changes in odour, taste, colour, texture; reduction of nutrients; loss of vitamins).

2.4.4 In view of this teaching and considering the absence of experimental data comparing the subject-matter claimed, in particular the UHT conditions according to claim 1, with D17, it is not credible that these alleged effects occur.

2.4.5 The respondent argued that it was not possible to provide comparative examples over D17 because this document lacked details on how the sterilisation process was carried out. It was therefore justified to take into account the patent's results, which compared the conditions "according to the invention" with processing under retorting conditions. Moreover, the respondent referred to the patent's experiments carried

out under "over-processing" conditions, which allegedly also demonstrated the effects achieved.

2.4.6 This is not convincing for several reasons.

2.4.7 Firstly, the respondent consistently argued that the only UHT conditions explicitly identified in D17 were from 135°C to 150°C for 2 to 8 seconds (on page 25) or for 1 to 12 seconds (figure 2.2-1). Therefore, on the face of it, D17 discloses UHT conditions on the basis of which meaningful tests could have been carried out.

2.4.8 Secondly, the "over-processing" conditions in the patent are carried out at an undisclosed temperature for an undisclosed period of time. For this reason alone, no meaningful conclusion can be drawn from these experiments. In addition, the "over-processing" conditions are manifestly intended to be harsher than those in claim 1. The results obtained under such conditions are thus not relevant for a second reason: they are not suitable for showing an effect over the closest prior art, as that document teaches *less* harsh conditions than those of claim 1.

2.4.9 Thirdly, as already touched upon in point 2.4.3 above, D17 contains ample teaching on the effects of various UHT conditions. These effects, as understood by the person skilled in the art, i.e. a food technologist, must be taken into account when assessing the technical contribution of the subject-matter of claim 1.

2.4.10 In this context, figure 2.2-1 and the effects disclosed therein have to be examined in more detail.

- The figure shows a temperature/time diagram of thermal treatment of food products. On the X-axis,

the temperature is plotted (from 100°C to above 150°C), while the Y-axis shows the heating time (from 1 second to over 2 000 seconds, in a logarithmic scale).

- Diagonal lines in the diagram delimit temperature/time combinations at which certain properties in the treated food products (e.g. 3% destruction of thiamine, destruction of thermophilic spores (55°C), no discolouration, 1 mg/l free HMF) are observed or are no longer observed.

- Two diagonal lines define an area which encompasses advantageous temperature/time combinations. The area is highlighted in grey and is delimited by the lines showing 3% destruction of thiamine and destruction of thermophilic spores (55°C).

- The figure contains a plurality of auxiliary lines parallel to the X-axis and Y-axis which assist the reader in deriving values from the diagram. The diagram is accurate enough to allow the reading of values.

- The figure also shows two rectangular regions. The region at the top left is framed with a solid line and designates the temperature/time conditions for sterilisation or retorting (from 110°C to 115°C for a period of time of more than 1 000 seconds). The second rectangular region is at the bottom right of the diagram. This region is framed with a dotted line and corresponds to the conventional UHT region (135°C to 150°C for 1 to 12 seconds).

- Some of the conditions defined in claim 1 (e.g. 130°C for 30 seconds) lie within the advantageous

temperature/time combinations of the area highlighted in grey. This area overlaps with the conventional UHT region (i.e. the region framed by dotted lines).

- However, other conditions defined in claim 1 (e.g. 130°C to 140°C for 240 seconds) are associated with disadvantages (e.g. more than 3% destruction of thiamine; discolouration).

2.4.11 In sum, figure 2.2-1 encompasses two distinct process conditions for preserving food products that are known to the skilled person:

(i) relatively mild UHT conditions at 135°C to 150°C for 1 to 12 seconds, and
(ii) retorting at 110°C or higher for more than 1 000 seconds.

The conditions called for in claim 1 lie in-between. They overlap with the advantageous conditions disclosed in the area highlighted in grey in figure 2.2.-1. At the same time, claim 1 encompasses harsher conditions associated with disadvantages.

2.4.12 Thus, there is no credible evidence that the conditions set out in claim 1 provide the alleged advantageous effects listed in point 2.4.1 above, at least not over the entire scope of the claim.

2.4.13 The same also applies to the alleged effect regarding the formation of furan. D17 teaches that UHT conditions selected from those in the area highlighted in grey prevent the formation of undesired substances, in particular 5-hydroxymethyl-furfural (HMF). This substance belongs to the chemical class of furans.

Therefore, it is not credible that there is any improvement in terms of furan values over D17, contrary to what the respondent alleged.

2.4.14 To conclude, the subject-matter of claim 1 is not associated with a credible technical effect other than providing another aseptic process.

2.5 Therefore, the technical problem is to provide an alternative process for producing an aseptic infant food product.

2.6 Obviousness

2.6.1 The question here is whether the skilled person would pre-cook the vegetable and the meat/fish ingredient separately for the purpose of subsequent UHT processing and whether they would choose the UHT conditions set out in claim 1.

2.6.2 These two features are taught in D17. As explained above, this document summarises the common general knowledge in the art of preserving food products using UHT processes. Therefore, the skilled person would be able to rely only on common general knowledge to arrive at the solution in claim 1.

2.6.3 More specifically, D17 teaches that it is possible to achieve a higher nutritional value after the cooking cycle if the vegetables and meat are separated. For each ingredient, a suitable heating (and cooling) process is applied (page 60). Such pre-cooking processes, which differ depending on the ingredient used (e.g. vegetable or meat), are described on pages 129 to 131. In view of this, the skilled person would readily envisage pre-cooking the vegetable and

the meat/fish ingredient separately, prior to UHT processing.

2.6.4 As to the UHT conditions in claim 1, D17 discloses that for a liquid product with larger particles, times for heating and heat-holding times must be much longer (page 29). As explained above in point 2.4.9, D17 teaches advantageous UHT conditions that overlap with those of claim 1.

2.6.5 The respondent argued that D17 discouraged jointly heat-treating the liquid carrier phase and food particles: the liquid phase would be over-sterilised and the advantages of the continuous UHT process would in part be lost. Rather, D17 compelled the skilled person to use the Twintherm process, in which the liquid phase is sterilised separately from the food particles.

2.6.6 However, contrary to what the respondent asserted, there is no "one-way-street" leading to the Twintherm process in D17. This process is explained as a possible process among other feasible alternatives, such as pre-cooking the ingredients separately. The skilled person would consider the latter option an obvious choice.

2.6.7 The respondent acknowledged the teaching in D17 that for sterilising larger particles, heating for a longer period of time was required. However, it contested that the skilled person would consider a period of time as long as that of claim 1.

2.6.8 This argument is not convincing. The skilled person would choose suitable conditions that provide the necessary sterilisation. They would not compromise on this. Furthermore, D17 already suggests suitable

conditions for periods of 30 seconds or even longer in the area highlighted in grey in figure 2.2-1. Contrary to the allegations of the respondent, there is nothing in D17 that would prevent the skilled person from working under the UHT conditions disclosed in claim 1.

2.7 To conclude, the subject-matter of claim 1 does not involve an inventive step (Article 56 EPC).

3. *Auxiliary requests 1 and 2 - inventive step*

3.1 Claim 1 of auxiliary request 2 specifies the pre-cooking conditions of both the vegetables and the meat/fish ingredient, whereas claim 1 of auxiliary request 1 specifies only the conditions of pre-cooking the vegetables.

3.2 As the appellant correctly pointed out, the pre-cooking conditions would be known to the skilled person, i.e a food technologist, and would not be associated with a technical effect.

3.3 The respondent did not provide any arguments that have convinced the board to the contrary. In particular, the argument that the additional features contributed to the effects also relied upon for the main request is not convincing. As discussed with respect to the main request, these effects are already taught in D17.

3.4 To conclude, neither the subject-matter of claim 1 of auxiliary request 1 nor that of claim 1 of auxiliary request 2 involves an inventive step (Article 56 EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chair:

T. Buschek A. Haderlein

Decision electronically authenticated