



(51) International Patent Classification:

A23L 21/20 (2016.01) A61Q 19/08 (2006.01)
A23L 33/135 (2016.01) A61K 35/644 (2015.01)
A23K 10/18 (2016.01) A61K 35/747 (2015.01)
A61Q 5/00 (2006.01) C12R 1/225 (2006.01)
A61Q 19/00 (2006.01) A61K 35/00 (2006.01)

(21) International Application Number:

PCT/IB2019/056055

(22) International Filing Date:

16 July 2019 (16.07.2019)

(25) Filing Language:

Italian

(26) Publication Language:

English

(30) Priority Data:

102018000007229 16 July 2018 (16.07.2018) IT

(71) Applicant: GIULIANI S.P.A. [IT/IT]; Via Palagi 2, 20129
Milano (IT).

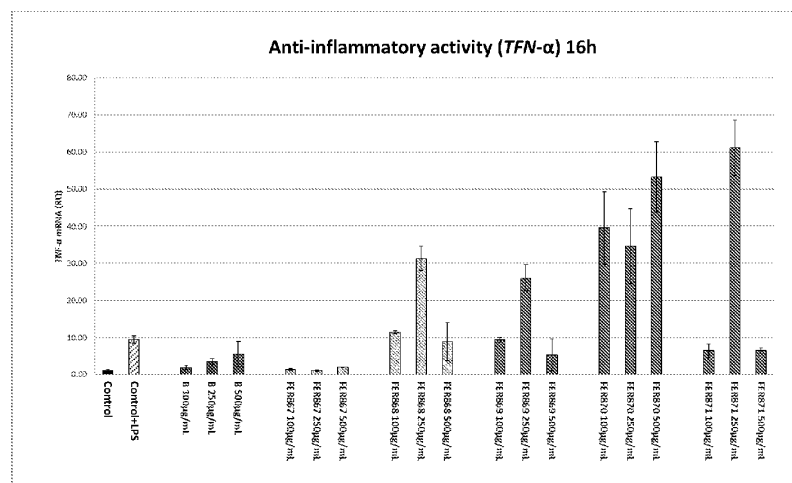
(72) Inventors: **GIULIANI, Giammaria**; Vicolo delle scuole
7, 6926 Montagnola (CH). **GOBBETTI, Marco**; Via Stra-
da di Ripa, 7, 06134 Perugia (IT). **DI CAGNO, Raf-
faella**; Via G. Fanelli 215, 70126 Bari (IT). **FILAN-
NINO, Pasquale**; Via Ildebrando Pizzetti, 4, 76121 Barlet-
ta (IT). **CANTATORE, Vincenzo**; Vanella Nello Rosselli,
5, 70037 Ruvo Di Puglia (IT). **MASCOLO, Antonio**; Via
Breda 140, 20126 Milano (IT). **MARZANI, Barbara**; Via
G. Marconi 13, 27020 Carbonara Al Ticino (IT).

(74) Agent: **COPPO, Alessandro** et al.; Notarbartolo & Gervasi
S.p.A., Corso di Porta Vittoria 9, 20122 Milano (IT).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,

(54) Title: MICROBIOLOGICAL PROCESS FOR THE PRODUCTION OF BEE BREAD

Figure 6A



(57) Abstract: The present invention relates to a biotechnological process for the production of a fermented pollen comprising the inoculation of pollen with at least one lactic bacterium of the species *Lactobacillus kunkeei* selected from *Lactobacillus kunkeei* PF12 (DSM 32843), PF13 (DSM 32845) and/or PL13 (DSM 32844) and the fermentation of the pollen inoculated with said lactic bacterium. The fermented pollen obtained has nutritional and organoleptic properties similar to bee bread naturally produced inside the honeycomb of the beehive and finds application in the food and nutraceutical field. The invention further encompasses *Lactobacillus kunkeei* PF12 (DSM 32843), PF13 (DSM 32845) and/or PL13 (DSM 32844) as such and compositions comprising these strains.

[Continued on next page]

OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
- *with (an) indication(s) in relation to deposited biological material furnished under Rule 13bis separately from the description (Rules 13bis.4(d)(i) and 48.2(a)(viii))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*