Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Corrigendum

Corrigendum to ‘Evidences and perspectives of the use of probiotics, prebiotics, synbiotics, and postbiotics as adjuvants for prevention and treatment of COVID-19: A bibliometric analysis and integrative review’ [Trends in Food Science & Technology 120 (2022) 174–192]

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The authors regret to inform that the reader should consider this article as a bibliometric and integrative review instead of a bibliometric and systematic review due to the methodological procedures followed.

Introduction section:
“This is an unprecedented study to identify the scientific perspectives of dietary interventions that may collaborate to immunomodulation and constrain the damage promoted by SARS-CoV-2 infection through a bibliometric analysis associated to a systematic review.”

Should be replaced with:
“This is an unprecedented study to identify the scientific perspectives of dietary interventions that may collaborate to immunomodulation and constrain the damage promoted by SARS-CoV-2 infection through a bibliometric analysis associated to an integrative review.”

Methodology section:
“Data collected in the Scopus database were then accomplished utilizing the VOSviewer v.1.6.17 (https://www.vosviewer.com/) in order to gather information related to countries network, co-occurrence networks of author keywords, and co-occurrence networks of terms in title/abstract. The data extracted from Scopus to obtain the terms present in titles and abstracts were processed utilizing binary counting without considering a repeated item in the same publication, according to the network view map. The software enables the elaboration of a map of co-occurrence terms from data exported in an Excel file format.

The clinical trials registered and associated to the effects of probiotics and synbiotics in the prevention and therapy of COVID-19 were collected in the ClinicalTrials.gov database (https://clinicaltrials.gov/) and included in the integrative review.”

Bibliometric analysis and scientific production section:
“In this study, the bibliometric analysis reported above, provided as a basis for leading the systematic review, approached the topics of highest relevance for microbiome modulation by means of these supplements as an adjunctive therapy, safe, effective, and a low-cost strategy to support prevention or and treatment of COVID-19.”

Should be replaced with:
“In this study, the bibliometric analysis reported above, provided as a basis for leading the integrative review, approached the topics of highest relevance for microbiome modulation by means of these supplements as an adjunctive therapy, safe, effective, and a low-cost strategy to support prevention or and treatment of COVID-19.”

Clinical evidence of probiotics to prevent or treat COVID-19 section:
“An interesting retrospective study carried out on 800 COVID-

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positive patients with diarrhea supplemented with probiotics showed that the disease duration time in the patients that were supplemented with probiotics, was significantly shorter compared to the control group and the probiotics contributed to relieving patients’ abdominal distension, nausea, vomiting, and other gastrointestinal symptoms (Huaren & Zazhi, 2021).

**Should be replaced with:**

“An interesting retrospective study carried out on 800 COVID-positive patients with diarrhea supplemented with probiotics showed that the disease duration time in the patients that were supplemented with probiotics, was significantly shorter compared to the control group and the probiotics contributed to relieving patients’ abdominal distension, nausea, vomiting, and other gastrointestinal symptoms (Ke & Zhang, 2020).”

**In the reference section:**

“Huaren, S., & Zazhi, X. (2021). World Chinese journal of digestology. https://www.wjgnet.com/1009-3079/. (Accessed August 22, 2021).”

**Should be replaced with:**

“Ke, E., & Zhang, H. (2020). Clinical effects of probiotics in ordinary-type COVID-19 patients with diarrhea. World Chinese Journal of Digestology, 28, 834–838.”

**Table 2**

Studies registered in ClinicalTrials.gov database related to the effects of probiotics and synbiotics in the prevention and therapy of COVID-19.

The Table 2 was updated with the addition of the study “NCT04368351”.

**Table 3**

Evidence of clinical trials with probiotic strain in coronavirus disease:

In Table 3, the correct citation is “Ke and Zhang (2020)” instead of “Huaren and Zazhi (2021).”

The authors would like to apologise for any inconvenience caused.

Revised Table 2. Studies registered in ClinicalTrials.gov database related to the effects of probiotics and synbiotics in the prevention and therapy of COVID-19.

| Identifier      | Investigators               | Country   | Recruitment status | Age | Supplement | Study design | Number enrolled | Intervention                                                                 | Primary outcome measures                                                                 | Access link                                                                 |
|-----------------|----------------------------|-----------|--------------------|-----|------------|--------------|-----------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| NCT04366089     | Francesco Pugliese          | Italy     | Recruiting         | ≥18 | Probiotic  | Parallel     | 152             | • SivoMixx (2 x 10[^11] of Streptococcus thermophilus DSM322245, Bifidobacterium lactis DSM 32246, Bifidobacterium lactis DSM 32247, Lactobacillus acidophilus DSM 32241, Lactobacillus helveticus DSM 32242, Lactococcus paracasei DSM 32243, Lactiplantibacillus plantarum DSM 32244, Levilactobacillus brevis DSM 27961) + Oxygen-ozone therapy - Standard of care or Control | • Number of patients, in treatment, needing orotracheal intubation                    | https://clinicaltrials.gov/ct2/show/NCT04366089                                  |
| NCT04366180     | Not informed                | Spain     | Recruiting         | ≥20 | Probiotic  | Parallel     | 314             | • Lactiplantibacillus 88 (3 x 10[^9] CFU) or Placebo (maltodextrin) - One capsule/day for 2 months | • Occurrence of healthcare workers infected with SARS-CoV-2                         | https://clinicaltrials.gov/ct2/show/NCT04366180                                |
| NCT04368351     | Gabriella d’Etorre          | Italy     | Active, not recruiting | ≥18 | Probiotic  | Case-Control | 70              | • SivoMixx (2 x 10[^11] of Streptococcus thermophilus DSM322245, Bifidobacterium lactis DSM 32246, Bifidobacterium lactis DSM 32247, Lactobacillus acidophilus DSM 32241, Lactobacillus helveticus DSM 32242, Lactococcus paracasei DSM 32243, Lactiplantibacillus plantarum DSM 32244, Levilactobacillus brevis DSM 27961) + Standard of care or Control | • Time interval for disappearance of acute diarrhea                                | https://clinicaltrials.gov/ct2/show/NCT04368351                                |
| NCT04390477     | Vicente Navarro             | Spain     | Completed          | ≥18 | Probiotic  | Parallel     | 40              | • SivoMixx/day for 14 days - Probiotic (1 x 10[^7] CFU) or Placebo - One oral capsule/day for 30 days | • Patients with discharge to ICU                                                   | https://clinicaltrials.gov/ct2/show/NCT04390477                                |
| NCT04399252     | Anthony Sung and Paul Wischmeyer | United States | Completed         | ≥1 | Probiotic  | Parallel     | 182             | • Lactococcus paracasei DSM 32243, Lactobacillus paracasei DSM 32243, Lactiplantibacillus plantarum DSM 32244, Levilactobacillus brevis DSM 27961) + Standard of care or Control | • Occurrence of one or more COVID-19 symptoms along the study interval             | https://clinicaltrials.gov/ct2/show/NCT04399252                                |
| NCT04420676     | Not informed                | Austria   | Recruiting         | ≥18 | Synbiotic  | Parallel     | 120             | • Omni-Biotic® 10 AAD (Bifidobacterium bifidum W23, Bifidobacterium lactis W51, Enterococcus faecium W54, Lactobacillus acidophilus W37, Lactobacillus acidophilus W55, Lactococcus paracasei | • Calprotectin present in stool                                                      | https://clinicaltrials.gov/ct2/show/NCT04420676                                |

(continued on next page)
| Identifier       | Investigators | Country     | Recruitment status | Age | Supplement | Study design | Number enrolled | Intervention | Primary outcome measures                                                                 | Access link               |
|------------------|---------------|-------------|--------------------|-----|------------|--------------|-----------------|--------------|-----------------------------------------------------------------------------------------|--------------------------|
| NCT04458519      | Martin Y Desrosiers | Canada      | Completed          | 18-59 y | Probiotic  | Parallel Assignment | 23              | W20, Lacticiplanibacillus plantarum W1, Lacticiplanibacillus plantarum W62, Lacticaseibacillus rhamnosus W71 and Ligilactobacillus salivarius W24) + a matrix containing maize starch, maltodextrin, inulin, potassium chloride, hydrolyzed rice protein, magnesium sulphate, fructooligosaccharides (FOS), enzymes (amylases), vanilla flavor and manganese sulphate or Placebo (matrix containing maize starch, maltodextrin, inulin, potassium chloride, hydrolyzed rice protein, magnesium sulphate, fructooligosaccharides (FOS), enzymes (amylases), vanilla flavor and manganese sulphate) | http://clinicaltrials.gov/ct2/show/NCT04458519 |
| NCT04462627      | Hanane El Kenz | Belgium     | Recruiting         | ≥18 y | Probiotic  | Parallel Assignment | 500             | Nasal probiotic irrigations with Proborinse (2.4 × 10^9 CFU of Lactococcus lactis W136, (NPN: 80085895)) or Nasal placebo irrigations with saline (NeilMed Sinus Rinse, (NPN: 80027142)) | https://clinicaltrials.gov/ct2/show/NCT04462627 |
| NCT04507867      | Fernando Leal Martínez | Not informed | Completed         | 30-75 y | Symbiotic  | Sequential Assignment | 240            | Nutritional Support System (NSS) + 2 sachets of NSS-1: Spirulina Maxima 2.5 g, folic acid 5 mg, Glutamine 5g, Cynomax Ultra (10 g of powder), ascorbic acid 1 g, zinc 20 mg, selenium 100 mcg, cholecalciferol 2000 IU, resveratrol 200 mg, concentrated omega 3 fatty acids (10 g of powder), L-Arginine 1.5 g, and magnesium 400 mg + 500 mg of Saccharomyces boulardii or Control with only NSS | http://clinicaltrials.gov/ct2/show/NCT04507867 |
| NCT04517422      | Not informed   | Mexico      | Completed          | 18-60 y | Probiotic  | Parallel Assignment | 300             | Probiotics (Lacticiplanibacillus plantarum CECT0292, Lacticiplanibacillus plantarum CECT 7484, Lacticiplanibacillus plantarum CECT 7485, and Pediococcus acidilactici CECT 7483) or Placebo (maltodextrin) | http://clinicaltrials.gov/ct2/show/NCT04517422 |
| NCT04581018      | Siew Chien Ng  | Hong Kong   | Recruiting         | ≥18 y | Symbiotic  | Parallel Assignment | 50              | Health supplements (symbiotic, 4g/day) + standard care or Control with only standard care | https://clinicaltrials.gov/ct2/show/NCT04581018 |
| NCT04621071      | Jean-Charles Pasquier | Canada      | Completed          | ≥18 y | Probiotic  | Parallel Assignment | 84             | Probiotics (2 strains 10^10 CFU) or Placebo (potato starch and magnesium stearate) | http://clinicaltrials.gov/ct2/show/NCT04621071 |

(continued on next page)
| Identifier | Investigators     | Country          | Recruitment status | Age | Supplement | Study design          | Number enrolled | Intervention                                                                                     | Primary outcome measures                                                                 | Access link                                                                                         |
|------------|------------------|------------------|--------------------|-----|------------|------------------------|-----------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| NCT04666116 | Not informed     | Spain            | Recruiting         | 18-99 y | • Probiotic | Parallel Assignment    | 96              | Not detailed                                                                                 | • Viral load along the admission phase to the nasopharyngeal smear                                 | https://clinicaltrials.gov/ct2/show/NCT04666116                                                   |
| NCT04730284 | Siew Ng          | Hong Kong        | Recruiting         | ≥18 y  | • Synbiotic | Single Group Assignment| 20              | • Health supplements (synbiotic, 4g/day)                                                        | • Shifts in intestinal microbiome                                                                       | https://clinicaltrials.gov/ct2/show/NCT04730284                                                   |
| NCT04734886 | Robert J Brunner | Sweden           | Completed          | 18-60 y | • Probiotic | Parallel Assignment     | 400             | • Limosilactobacillus reuteri DSM 17938 (10^{10} CFU) + vitamin D (10 μg) or Placebo + vitamin D (10 μg) | • Specific antibodies for SARS-CoV-2                                                                  | https://clinicaltrials.gov/ct2/show/NCT04734886                                                   |
| NCT04847349 | Daniel B Brummer | Sweden           | Recruiting         | ≥60 y  | • Probiotic | Parallel Assignment     | 201             | • Two capsules/day for 6 months                                                                | • Occurrence of infection by SARS-CoV-2                                                               | https://clinicaltrials.gov/ct2/show/NCT04847349                                                   |
| NCT04756466 | Anxo Fernandez-Ferreiro | Spain       | Active, not recruiting | ≥60 y  | • Probiotic | Parallel Assignment     | 200             | • Lactobacillus probiotic strain (3 x 10^{9} CFU/day) or Placebo (maltodextrin)                | • Change in gravity of infection symptoms by COVID-19 after the utilizing microbiome spray          | https://clinicaltrials.gov/ct2/show/NCT04756466                                                   |
| NCT04793997 | Not informed     | Belgium          | Recruiting         | 18-65 y | • Probiotic | Parallel Assignment     | 150             | • Throat spray: Throat spray containing 3 beneficial lactobacilli strains or Placebo spray     | • Shift in the acute and delayed immune response to the influenza vaccine and against COVID-19 after administration of supplement Alteration in blood concentration of zinc and selenium | https://clinicaltrials.gov/ct2/show/NCT04793997                                                   |
| NCT04798677 | Julián A. Mateus Rodríguez | Spain       | Recruiting         | ≥18 y  | • Synbiotic | Parallel Assignment     | 90              | • ABBC1 Immunoessential Powder (Saccharomyces cerevisiae + beta-glucan complex + selenium and zinc) or Placebo in patients who had taken COVID-19 vaccine Dissolution in water for 30 days | • Alteration in the levels of serum IgG with property anti-SARS-CoV-2                                | https://clinicaltrials.gov/ct2/show/NCT04798677                                                   |
| NCT04813718 | Not informed     | Austria          | Recruiting         | ≥18 y  | • Synbiotic | Parallel Assignment     | 20              | • Omni-Biotic Pro Vi5 or Placebo.                                                              | • Microbiome composition                                                                           | https://clinicaltrials.gov/ct2/show/NCT04813718                                                   |
| NCT04847349 | Daniel B Horton  | United States    | Recruiting         | 18-60 y | • Probiotic | Parallel Assignment     | 45              | • Probiotic OL-1, standard dose or Placebo (maltodextrin)                                      | • Gut barrier                                                                                      | https://clinicaltrials.gov/ct2/show/NCT04847349                                                   |
| NCT04854941 | Not informed     | Russia           | Completed          | 18-75 y | • Probiotic | Parallel Assignment     | 200             | • Probiotics (10^{10} CFU of each strain: Lactisacidobacillus rhamnosus PDV 1705, Bifidobacterium bifidum PDV 0903, Bifidobacterium lactis PDV subsp. infantis PDV 911and Bifidobacterium lactis PDV 2503) or standard treatment for COVID-19 3 times/day for 2 weeks | • Immunological and inflammatory parameters                                                          | https://clinicaltrials.gov/ct2/show/NCT04854941                                                   |
| NCT04877704 | Not informed     | United Kingdom   | Not yet recruiting  | 18-85 y | • Probiotic | Single Group Assignment | 60              | • Symprowe probiotic (a water-based formula containing live, active bacteria) or a matched Placebo to Symprove probiotic: 2 sachets/day for 12 weeks.                  | • Mortality among hospitalized patients                                                               | https://clinicaltrials.gov/ct2/show/NCT04877704                                                   |
| NCT04884776 | Joyce WY Mak     | Hong Kong        | Recruiting         | ≥18 y  | • Probiotic | Parallel Assignment     | 484             | • Microbiome immunity formula (10^{9} of probiotics blend of 3 Bifidobacteria/sachets) or Placebo | • Renovation of intestinal dysbiosis                                                                 | https://clinicaltrials.gov/ct2/show/NCT04884776                                                   |
| NCT04907877 | Zoriana Hoda     | Not informed     | Not yet recruiting  | 18-65 y | • Probiotic | Parallel Assignment     | 300             | • Probiotic NordBiotic ImmunoVir (5 x 10^{9} of a mixture of Bifido- and Lactobacilli or Placebo (maltodextrin) Once a day for 28 days | • Overall score of symptoms                                                                          | https://clinicaltrials.gov/ct2/show/NCT04907877                                                   |
| NCT04922918 | Not informed     | Spain            | Recruiting         | 74-98 y | • Probiotic | Single Group Assignment | 25              | • Fermented milk containing Lplactobacillus salivarius MP101 (>10^{10} CFU) Daily for 4 months | • Barthel index                                                                                     | https://clinicaltrials.gov/ct2/show/NCT04922918                                                   |
| NCT04937556 | Not informed     | Spain            | Recruiting         | 18-65 y | • Probiotic | Parallel Assignment     | 60              | • Capsule containing Lplactobacillus salivarius (10^{3} CFU), vitamin D and zinc citrate One capsules/day for 28 days | • MNA score                                                                                         | https://clinicaltrials.gov/ct2/show/NCT04937556                                                   |

(continued on next page)
ICU: intensive care unit; IgG: immunoglobulin G; MNA: Mini nutritional assessment; No studies results were posted at moment.

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| Identifier       | Investigators | Country                | Recruitment status | Age | Supplement | Study design          | Number enrolled | Intervention                                                                 | Primary outcome measures                                                                 | Access link |
|------------------|---------------|------------------------|--------------------|-----|------------|------------------------|----------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------|
| NCT04941703     | Not informed  | United States          | Recruiting         | ≥18 | Probiotic  | Parallel Assignment    | 30             | • Capsule containing probiotics and 296 ml magnesium citrate                   | • Reduction in the incidence of COVID-19 cases on the ordinal outcome scale              | https://clinicaltrials.gov/ct2/show/NCT04941703                                    |
| NCT04950803     | Siew Ng       | Hong Kong              | Recruiting         | ≥18 | Probiotic  | Parallel Assignment    | 280            | • Sachet containing 3_Bifidobacteria (10⁹ CFU)                                | • Any comorbidities, including clinical manifestations related to COVID-19. Improvement of parameters associated to COVID-19 (clinical improvement) | https://clinicaltrials.gov/ct2/show/NCT04950803                                    |
| NCT05043376     | Not informed  | Pakistan               | Completed           | ≥18 | Probiotic  | Parallel Assignment    | 50             | • Tablet containing Streptococcus salivarius K12                             | • Number of patients with COVID-19 after of 90 days of diagnosis                      | https://clinicaltrials.gov/ct2/show/NCT05043376                                    |
| NCT05080244     | Jean-Charles Pasquier | Canada        | Recruiting         | ≥18 | Probiotic  | Parallel Assignment    | 618            | • Capsule containing 2 strains (10⁹ CFU)                                     | • Any comorbidities, including clinical manifestations related to COVID-19. Improvement of parameters associated to COVID-19 (clinical improvement) | https://clinicaltrials.gov/ct2/show/NCT05080244                                    |

Revised Table 3. Evidence of clinical trials with probiotic strain in coronavirus disease.

| Reference          | Country          | Study type                  | Subjects                                                                 | Probiotic strain                                                                 | Intervention                                                                 | Main results                                                                 | Access link |
|--------------------|------------------|-----------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------|
| d’Ettorre et al. (2020) | Italy            | Single group               | Seventy patients with COVID-19 hospitalized                             | Streptococcus thermophilus DSM 32345, Lactobacillus acidophilus DSM 32241, Lactobacillus helvetica DSM 32242, Lactococcus paracasei DSM 32243, Lactiplantibacillus plantarum DSM 32244, Levlactobacillus brevis DSM 27961, Bifidobacterium lactis DSM 32246, Bifidobacterium lactic DSM 32247. | Daily oral 2.4 billion CFU bacteria for a period of 14 days                 | A probiotic intervention demonstrated a significant improving on the clinical conditions of patients with COVID-19 | https://clinicaltrials.gov/ct2/show/NCT04941703                                    |
| Tang et al. (2021) | United States    | Double-blinded, randomized, placebo-controlled trial | One thousand one hundred and thirty-two individuals with household contact who tested positive for COVID-19 | Lactococcus lactis W136                                                          | Nasal irrigations through buffered isotonic solution containing 2.4 × 10⁹ CFU of Lactococcus lactis W136 or buffered isotonic saline isolated for along the 2 weeks (twice daily) | Probiotics are low-cost and safe. It can serve as a rapid intervention strategy in the prevention or reduction of symptoms against pandemic diseases | https://clinicaltrials.gov/ct2/show/NCT04950803                                    |
| Endam et al. (2020) | Canada, Saudi Arabia, and United States | Prospective randomized clinical trial | Twenty-three individuals between aged 18-59 years having received lately PCR tested positive for SARS-CoV-2 | | | Probiotic intranasal intervention was correlated with a reduced number of patients showing moderate/severe symptoms of fatigue, loss of perception of smell, and sensation of breathlessness, and by an improved proportion of individuals with moderate/severe facial pain or sore throat | https://clinicaltrials.gov/ct2/show/NCT05043376                                    |
| Gutiérrez-Castrellón et al. (2021) | Mexico and Spain | Single-center, quadruple-blinded randomized clinical trial | Three hundred outpatients with symptomatic COVID-19 (aged between 18 and 60 years) with positive nucleic acids test for SARS-CoV-2 | Lactiplantibacillus plantarum KABP022, KABP023 and KABP033, Pedococcus acidilactici KABP021 | 10⁹ probiotic daily ingestion for a period of 30 days | Remission was achieved by 53% of probiotic group compared to 28% in placebo | https://clinicaltrials.gov/ct2/show/NCT05080244                                    |
| Ke and Zhang (2020) | China            | This retrospective single-center study | Eight hundred positive cases of COVID-19 (ordinary-type) | Multiple strains | Decrease or remission of diarrhea in COVID-19 patients | Duration of diarrhea in probiotic group was significantly shorter in relation to placebo group. The multiple strains had effect in reducing individuals' gastrointestinal symptoms as abdominal distension, nausea, vomiting, and among others Certain immune factors can be utilized as possible nasal or fecal biomarkers of the benefits of supplementation of probiotic strain in the diet of elderly people infected with SARS-CoV-2. | https://clinicaltrials.gov/ct2/show/NCT05080244                                    |
| Mozota et al. (2021) | Spain            | Single group               | Twenty-nine residents of a nursing home who tested positive for COVID-19 | Ligilactobacillus salivarius MP101                                               | Daily consumption of 10⁹ CFU of Ligilactobacillus salivarius MP101 per unit of product (125 g). | Duration of diarrhea in probiotic group was significantly shorter in relation to placebo group. The multiple strains had effect in reducing individuals' gastrointestinal symptoms as abdominal distension, nausea, vomiting, and among others Certain immune factors can be utilized as possible nasal or fecal biomarkers of the benefits of supplementation of probiotic strain in the diet of elderly people infected with SARS-CoV-2. | https://clinicaltrials.gov/ct2/show/NCT05080244                                    |