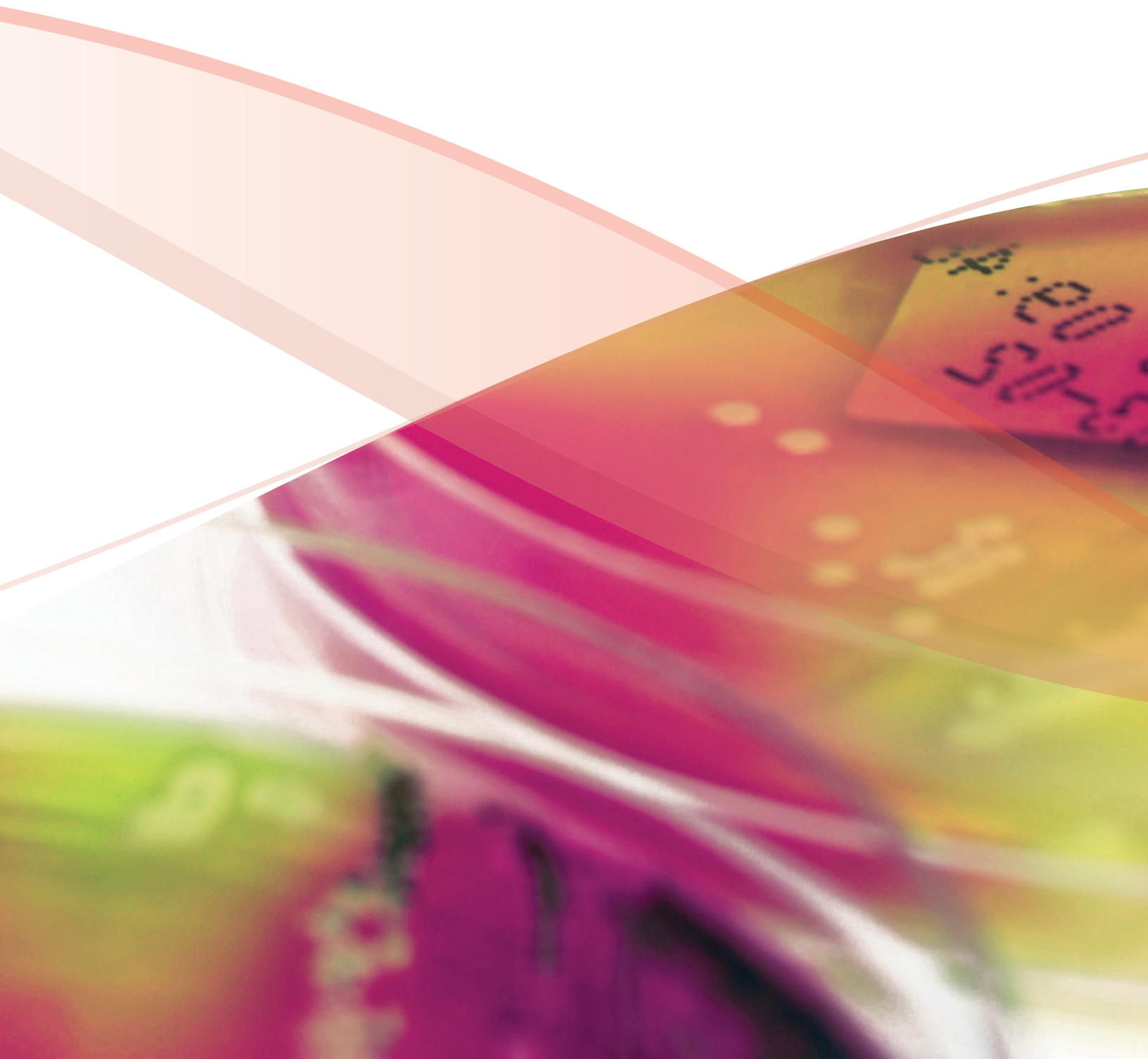




# Pharmaceutical Microbiology



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**ATCC provides research and development tools and reagents as well as related biological material management services, consistent with its mission: to acquire, authenticate, preserve, develop, and distribute standard reference microorganisms, cell lines, and related materials for research in the life sciences**

For over 95 years, ATCC has been a leading provider of high-quality biological materials and standards to the life science community. We are an independent, 501(c)(3) non-profit entity focused on scientific enablement at universities, research institutes, government agencies, and commercial research labs. Our diverse and comprehensive resources in cell biology and microbiology have been central to the growth of the biotechnology age. ATCC has as its core mission to source, authenticate and further develop products and services essential to the needs of basic and applied life science work.

ATCC distributes to more than 165 countries on 6 continents and has a growing international network of 15 distribution partners. Our infrastructure and experience in biological materials logistics enables us to work effectively with researchers no matter where they are located.

# PHARMACEUTICAL MICROBIOLOGY

Pharmaceutical companies are well versed in the important role of microbiological testing in its basic functions—product research and development, process validation, manufacturing, and quality control.

The pharmaceutical industry looks to ATCC to provide top-quality, fully characterized strains necessary to maintain the highest levels of product integrity and reputation. With ATCC Genuine Cultures, pharmaceutical customers can rely on:

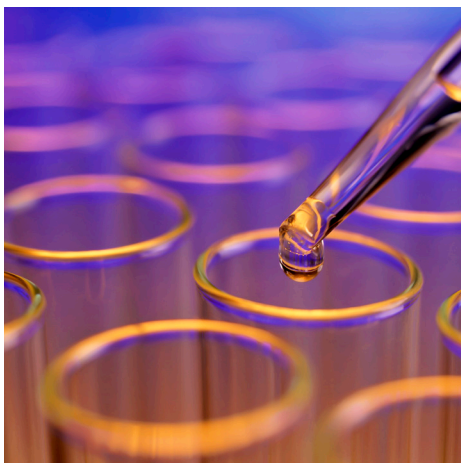
- Polyphasic identification and strain characterization
- Proprietary systems for managing strain stocks
- Meticulous propagation, preservation, and storage protocols
- Robust quality systems
- Over 95 years of service

Whenever possible, ATCC balances traditional biochemical testing methods with automated phenotypic and genotypic analyses. This provides highly accurate identification across a wide array of microorganisms and can help avoid the pitfalls of misidentification, painful recalls, and regulatory repercussions. Each vial contains a minimal passage descendant of the original material and has been handled only by ATCC.

ATCC is a trusted scientific resource and an ISO 9001 certified and ISO 17025 and ISO 17034 accredited organization. Our customer and technical service teams, as well as our global network of authorized distributors, understand the complexities of distributing and supporting microbial cultures worldwide. Our laboratory procedures maintain strains carefully, safely, and effectively to ensure optimal viability, backed by our warranty.

- Strains provided for key pharmaceutical applications are listed in two ways:
- Strains specified by United States Pharmacopeia (USP), European Pharmacopeia (EP), or Japanese Pharmacopeia (JP) official microbial assays
- Strains listed alphabetically by genus and species paired with relevant applications

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# STRAINS SPECIFIED BY OFFICIAL MICROBIAL ASSAYS

**Table 1: Official Microbial Assays: United States Pharmacopeia (USP)**

Application	ATCC® No.
<b>USP Chapter: &lt;51&gt; Antimicrobial Effectiveness Testing</b>	
<i>Candida albicans</i> 3147	10231™
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<i>Escherichia coli</i> Crooks	8739™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<b>USP Chapter: &lt;60&gt; Microbiological Examination of Nonsterile Products: Tests for <i>Burkholderia cepacia</i> Complex</b>	
<i>Burkholderia cepacia</i> UCB 717	25416™
<i>Burkholderia cenocepacia</i> LMG 16656	BAA-245™
<i>Burkholderia multivorans</i> LMG 13010	BAA-247™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<b>USP Chapter: &lt;61&gt; Microbiological Examination of Nonsterile Products: Microbial Enumeration Tests</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Candida albicans</i> 3147	10231™
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<b>USP Chapter: &lt;62&gt; Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Escherichia coli</i> Crooks	8739™
<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium CDC 6516-60	14028™
<i>Candida albicans</i> 3147	10231™
<i>Clostridium sporogenes</i> L.S. McClung 2006	11437™
<i>Clostridium sporogenes</i>	19404™
<b>USP Chapter: &lt;63&gt; Mycoplasma Tests</b>	
<i>Acholeplasma laidlawii</i> PG8	23206™
<i>Mycoplasma gallisepticum</i> PG 31	19610™
<i>Mycoplasma fermentans</i> PG 18	19989™
<i>Mycoplasma hyorhinis</i> BTS-7	17981™
<i>Mycoplasma orale</i> CH 19299	23714™
<i>Mycoplasma pneumoniae</i> FH strain of Eaton Agent	15531™
<i>Mycoplasma synoviae</i> WVU 1853	25204™
<b>USP Chapter: &lt;71&gt; Sterility Tests</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Clostridium sporogenes</i>	19404™
<i>Clostridium sporogenes</i> L.S. McClung 2006	11437™
<i>Candida albicans</i> 3147	10231™
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<i>Kocuria rhizophila</i> FDA strain PCI 1001	9341™
<i>Bacteriodes vulgatus</i>	8482™

**Table 1: Official Microbial Assays: United States Pharmacopeia (USP) (continued)**

Application	ATCC® No.
<b>USP Chapter: &lt;81&gt; Antibiotics-Microbial Assays</b>	
<i>Saccharomyces cerevisiae</i>	9763™
<i>Micrococcus luteus</i> 130.21	10240™
<i>Mycobacterium smegmatis</i>	607™
<i>Pseudomonas aeruginosa</i>	25619™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA	29737™
<i>Bordetella bronchiseptica</i> NRRL B-140	4617™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Kocuria rhizophila</i> FDA strain PCI 1001	9341™
<i>Staphylococcus epidermidis</i> FDA strain PCI 1200	12228™
<i>Saccharomyces cerevisiae</i>	2601™
<i>Enterococcus hirae</i> FDA M19	10541™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> 3R7089 strain Oxford	9144™
<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	10031™
<i>Escherichia coli</i> MacLeod	10536™
<b>USP Chapter: &lt;91&gt; Calcium Pantothenate Assay</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<b>USP Chapter: &lt;115&gt; Dexpanthenol Assay</b>	
<i>Pediococcus acidilactici</i>	8042™
<b>USP Chapter: &lt;171&gt; Vitamin B12 Activity Assay</b>	
<i>Lactobacillus leichmannii</i> 313	7830™
<b>USP Chapter: &lt;441&gt; Niacin or Niacinamide Assay</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<b>USP Chapter: &lt;1035&gt; Biological Indicators</b>	
<i>Geobacillus stearothermophilus</i> NCA 26	12980™
<b>USP Chapter: &lt;1046&gt; Cellular and Tissue-Based Products</b>	
Hybrid Moloney/Amphotropic Murine leukemia virus (Mo/A-MuLv)	VR-1448™
Hybrid Moloney/Amphotropic Murine leukemia virus (Mo/A-MuLv)	VR-1450™
<b>USP Chapter: &lt;1072&gt; Disinfectants and Antiseptics</b>	
<i>Escherichia coli</i> AMC 198	11229™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Pseudomonas aeruginosa</i> PRD-10	15442™
<i>Candida albicans</i> 3147	10231™
<i>Candida albicans</i> 132	2091™
<i>Penicillium chrysogenum</i> Wis. 49-133	11709™
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<i>Bacillus spizizenii</i> PRD 66	19659™
<b>USP Chapter: &lt;1211&gt; Sterilization and Sterility Assurance of Compendial Articles</b>	
<i>Geobacillus stearothermophilus</i>	7953™
<i>Bacillus atrophaeus</i> NRS 1221A	9372™
<b>USP Chapter: &lt;1229.1&gt; Steam Sterilization by Direct Contact</b>	
<i>Geobacillus stearothermophilus</i> NCA 26	12980™
<i>Geobacillus stearothermophilus</i>	7953™
<b>USP Dietary Supplement Chapter: &lt;2021&gt; Microbial Enumeration Tests - Nutritional and Dietary Supplements</b>	
<i>Candida albicans</i> 3147	10231™
<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium NCTC 74	13311™

**Table 1: Official Microbial Assays: United States Pharmacopeia (USP) (continued)**

<b>Application</b>	<b>ATCC® No.</b>
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Escherichia coli</i> Crooks	8739™
<b>USP Dietary Supplements: Oil- and Water-Soluble Vitamins Capsules</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<i>Pediococcus acidilactici</i>	8042™
<b>USP Dietary Supplements: Oil- and Water-Soluble Vitamins Oral Solution</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<i>Pediococcus acidilactici</i>	8042™
<b>USP Dietary Supplements: Oil- and Water-Soluble Vitamins Tablets</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<b>USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Capsules</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<i>Pediococcus acidilactici</i>	8042™
<b>USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Oral Solution</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<i>Pediococcus acidilactici</i>	8042™
<b>USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Tablets</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<b>USP Dietary Supplements: Water-Soluble Vitamins Capsules</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Pediococcus acidilactici</i>	8042™
<b>USP Dietary Supplements: Water-Soluble Vitamins Tablets</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<b>USP Dietary Supplements: Water-Soluble Vitamins with Minerals Capsules</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<i>Pediococcus acidilactici</i>	8042™
<b>USP Dietary Supplements: Water-Soluble Vitamins with Minerals Oral Solution</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<i>Pediococcus acidilactici</i>	8042™
<b>USP Dietary Supplements: Water-Soluble Vitamins with Minerals Tablets</b>	
<i>Lactiplantibacillus plantarum</i> 17-5	8014™
<i>Lactobacillus leichmannii</i> 313	7830™
<b>USP Monographs: Biological Indicator for Dry-Heat Sterilization, Paper Carrier</b>	
<i>Bacillus atrophaeus</i> NRS 1221A	9372™

**Table 1: Official Microbial Assays: United States Pharmacopeia (USP) (continued)**

<b>Application</b>	<b>ATCC® No.</b>
<b>USP Monographs: Biological Indicator for Ethylene Oxide Sterilization, Paper Carrier</b>	
<i>Bacillus atropheus</i> NRS 1221A	9372™
<b>USP Monographs: Biological Indicator for Steam Sterilization, Paper Carrier</b>	
<i>Geobacillus stearothermophilus</i> NCA 26	12980™
<i>Geobacillus stearothermophilus</i>	7953™
<b>USP Monographs: Penicillamine</b>	
<i>Kocuria rhizophila</i> FDA strain PCI 1001	9341™
<b>USP Monographs: Penicillin G Procaine and Novobiocin Sodium Intramammary Infusion</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> PCI 1209/N	12692™
<b>USP Monographs: Tetracycline Hydrochloride and Novobiocin Sodium Tablets</b>	
<i>Escherichia coli</i> MacLeod	10536™

**Table 2: Official Microbial Assays: European Pharmacopeia (EP) Edition 8.1**

Application	ATCC® No.
<b>EP 2.6.1 Sterility</b>	
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<i>Clostridium sporogenes</i>	19404™
<i>Candida albicans</i> 3147	10231™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> Rosenbach FDA 209	6538™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<b>EP 2.6.7 Mycoplasmas</b>	
<i>Mycoplasma fermentans</i> PG18	19989™
<i>Mycoplasma pneumoniae</i> FH strain of Eaton Agent	15531™
<i>Mycoplasma hyorhinis</i> BTS-7	17981™
<i>Mycoplasma gallisepticum</i> PG31	19610™
<i>Mycoplasma orale</i> CH 19299	23714™
<i>Mycoplasma synoviae</i> WVU 1853	25204™
<i>Acholeplasma laidlawii</i> PG8	23206™
<b>EP 2.6.12 Microbial examination of non-sterile products: Microbial Enumeration Tests</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<i>Candida albicans</i> 3147	10231™
<b>EP 2.6.13 Microbial examination of non-sterile products: Test for Specified Micro-organisms</b>	
<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium CDC 6516-60	14028™
<i>Clostridium sporogenes</i> L.S. McClung 2006	11437™
<i>Clostridium sporogenes</i>	19404™
<i>Escherichia coli</i> Crooks	8739™
<i>Candida albicans</i> 3147	10231™
<b>EP 2.6.27 Microbiological Control of Cellular Products</b>	
<i>Candida albicans</i> 3147	10231™
<i>Clostridium sporogenes</i> L.S. McClung 2006	11437™
<i>Propionibacterium acnes</i> Gerath	11827™
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<i>Clostridium sporogenes</i>	19404™
<i>Streptococcus pyogenes</i> Bruno	19615™
<i>Bacteroides fragilis</i> VPI 2553	25285™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> Rosenbach FDA 209	6538™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Yersinia enterocolitica</i> subsp. <i>enterocolitica</i> 33114	9610™
<b>EP 2.6.31 Microbiological Examination of Herbal Medicinal Products for Oral Use</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> Rosenbach FDA 209	6538™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Escherichia coli</i> Crooks	8739™
<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium CDC 6516-60	14028™
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>EP 2.7.2 Microbiological assays of antibiotics</b>	
<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	10031™



**Table 2: Official Microbial Assays: European Pharmacopeia (EP) Edition 8.1 (continued)**

<b>Application</b>	<b>ATCC® No.</b>
<i>Micrococcus luteus</i> 130.21	<u>10240</u> <sup>TM</sup>
<i>Escherichia coli</i> MacLeod	<u>10536</u> <sup>TM</sup>
<i>Enterococcus hirae</i> FDA M19	<u>10541</u> <sup>TM</sup>
<i>Staphylococcus epidermidis</i> FDA strain PCI 1200	<u>12228</u> <sup>TM</sup>
<i>Bacillus pumilus</i>	<u>14884</u> <sup>TM</sup>
<i>Bordetella bronchiseptica</i>	<u>4617</u> <sup>TM</sup>
<i>Mycobacterium smegmatis</i>	<u>607</u> <sup>TM</sup>
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	<u>6538</u> <sup>TM</sup>
<i>Bacillus spizizenii</i> NRS 231	<u>6633</u> <sup>TM</sup>
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> 3R7089 strain Oxford	<u>9144</u> <sup>TM</sup>
<i>Kocuria rhizophila</i> FDA strain PCI 1001	<u>9341</u> <sup>TM</sup>
<i>Escherichia coli</i> 397E	<u>9637</u> <sup>TM</sup>
<i>Saccharomyces cerevisiae</i>	<u>9763</u> <sup>TM</sup>
<b>EP 5.1.2 Biological indicators of sterilization</b>	
<i>Bacillus pumilus</i> E601	<u>27142</u> <sup>TM</sup>
<i>Geobacillus stearothermophilus</i>	<u>7953</u> <sup>TM</sup>
<i>Bacillus atrophaeus</i> NRS 1221A	<u>9372</u> <sup>TM</sup>
<b>EP 5.1.3 Efficacy of antimicrobial preservation</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	<u>6538</u> <sup>TM</sup>
<i>Aspergillus brasiliensis</i> WLRI 034(120)	<u>16404</u> <sup>TM</sup>
<i>Escherichia coli</i> Crooks	<u>8739</u> <sup>TM</sup>
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	<u>9027</u> <sup>TM</sup>
<i>Candida albicans</i> 3147	<u>10231</u> <sup>TM</sup>
<b>EP Monographs: Penicillamine</b>	
<i>Kocuria rhizophila</i> FDA strain PCI 1001	<u>9341</u> <sup>TM</sup>
<b>EP Monographs: Water for Injections</b>	
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	<u>9027</u> <sup>TM</sup>
<i>Bacillus spizizenii</i> NRS 231	<u>6633</u> <sup>TM</sup>
<b>EP Monographs: Water for Preparation of Extracts</b>	
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	<u>9027</u> <sup>TM</sup>
<i>Bacillus spizizenii</i> NRS 231	<u>6633</u> <sup>TM</sup>
<b>EP Monographs: Water, Highly Purified</b>	
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	<u>9027</u> <sup>TM</sup>
<i>Bacillus spizizenii</i> NRS 231	<u>6633</u> <sup>TM</sup>
<b>EP Monographs: Water, Purified</b>	
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	<u>9027</u> <sup>TM</sup>
<i>Bacillus spizizenii</i> NRS 231	<u>6633</u> <sup>TM</sup>

**Table 3: Official Microbial Assays: Japanese Pharmacopeia (JP)**

<b>Application</b>	<b>ATCC® No.</b>
<b>JP 16 4.05. I Microbiological Examination Of Non-Sterile Products: Total Viable Aerobic Count</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Candida albicans</i> 3147	10231™
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<b>JP 16 4.05. II Microbiological Examination Of Non-Sterile Products: Tests For Specified Micro-Organisms</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Escherichia coli</i> Crooks	8739™
<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium CDC 6516-60	14028™
<i>Candida albicans</i> 3147	10231™
<i>Clostridium sporogenes</i> L.S. McClung 2006	11437™ or 19404™
<b>JP 16 4.06 Sterility Test</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Clostridium sporogenes</i> L.S. McClung 2006	11437™ or 19404™
<i>Candida albicans</i> 3147	10231™
<i>Aspergillus brasiliensis</i> WLRI 034	16404™
<b>JP 16 5.02 Microbial Limit Test For Crude Drugs</b>	
<i>Escherichia coli</i> Crooks	8739™
<i>Bacillus spizizenii</i> NRS 231	6633™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Candida albicans</i> 3147 or 132	10231™ or 2091™
<b>JP 16 Monographs: Amphotericin B</b>	
<i>Saccharomyces cerevisiae</i> NRRL Y-567	9763™
<b>JP 16 Monographs: Ampicillin Sodium</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Arbekacin Sulfate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Bacitracin</b>	
<i>Micrococcus luteus</i> 130.21	10240™
<b>JP 16 Monographs: Bekanamycin Sulfate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Benzylpenicillin Potassium</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<b>JP 16 Monographs: Bleomycin Hydrochloride</b>	
<i>Mycobacterium smegmatis</i>	607™
<b>JP 16 Monographs: Bleomycin Sulfate</b>	
<i>Mycobacterium smegmatis</i>	607™
<b>JP 16 Monographs: Cloxacillin Sodium Hydrate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Cycloserine</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Dibekacin Sulfate</b>	

**Table 3: Official Microbial Assays: Japanese Pharmacopeia (JP) (continued)**

<b>Application</b>	<b>ATCC® No.</b>
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 monographs: dicloxacillin sodium hydrate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Enviomycin Sulfate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Erythromycin</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<b>JP 16 Monographs: Erythromycin Ethylsuccinate</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<b>JP 16 Monographs: Erythromycin Lactobionate</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<b>JP 16 Monographs: Erythromycin Stearate</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<b>JP 16 Monographs: Fradiomycin Sulfate</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<b>JP 16 Monographs: Gentamicin Sulfate</b>	
<i>Staphylococcus epidermidis</i> FDA strain PCI 1200	12228™
<b>JP 16 Monographs: Gramicidin</b>	
<i>Enterococcus hirae</i> FDA M19	10541™
<b>JP 16 Monographs: Josamycin</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Josamycin Propionate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Kanamycin Monosulfate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Kanamycin Sulfate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Kitasamycin</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Kitasamycin Acetate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Kitasamycin Tartrate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Micronomicin Sulfate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Midecamycin</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Midecamycin Acetate</b>	
<i>Kocuria rhizophila</i> FDA strain PCI 1001	9341™
<b>JP 16 Monographs: Nystatin</b>	
<i>Saccharomyces cerevisiae</i> NRRL Y-567	9763™

**Table 3: Official Microbial Assays: Japanese Pharmacopeia (JP) (continued)**

Application	ATCC® No.
<b>JP 16 Monographs: Peplomycin Sulfate</b>	
<i>Mycobacterium smegmatis</i>	607™
<b>JP 16 Monographs: Ribostamycin Sulfate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Rokitamycin</b>	
<i>Kocuria rhizophila</i> FDA strain PCI 1001	9341™
<b>JP 16 Monographs: Sodium Fusidate</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<b>JP 16 Monographs: Spectinomycin Hydrochloride Hydrate</b>	
<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i> PCI 602	10031™
<b>JP 16 Monographs: Spiramycin Acetate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Streptomycin Sulfate</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Sulbenicillin Sodium</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Teicoplanin</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Tobramycin</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Vancomycin Hydrochloride</b>	
<i>Bacillus spizizenii</i> NRS 231	6633™
<b>JP 16 Monographs: Zinostatin Stimalamer</b>	
<i>Kocuria rhizophila</i> FDA strain PCI 1001	9341™
<b>JP 16 G3 Biotechnological/Biological Products: Mycoplasma Testing For Cell Substrates Used For The Production Of Biotechnological/Biological Products</b>	
<i>Mycoplasma pneumoniae</i> FH strain of Eaton Agent	15531™
<i>Mycoplasma orale</i> CH 19299	23714™
<i>Mycoplasma hyorhinis</i> DBS 1050 or BTS-7	29052™ or 17981™
<b>JP 16 G4 Microorganisms: Preservatives-Effectiveness Tests</b>	
<i>Escherichia coli</i> Crooks	8739™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Candida albicans</i> 3147	10231™
<i>Aspergillus brasiliensis</i> WLRI 034(120)	16404™
<b>JP 16 G4 Microorganisms: Terminal Sterilization And Sterilization Indicators</b>	
<i>Brevundimonas diminuta</i> FDA strain PCI 818	19146™
<i>Geobacillus stearothermophilus</i>	7953™
<i>Bacillus atrophaeus</i> NRS 1221A	9372™
<b>JP 16 G8 Quality Control Of Water For Pharmaceutical Use</b>	
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	6538™
<i>Escherichia coli</i> Crooks	8739™
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	9027™
<i>Pseudomonas protegens</i> 1	17386™
<i>Methylobacterium extorquens</i> NBRC 15911	BAA-2500™

# STRAINS LISTED BY GENUS AND SPECIES

**Table 4: Strains for Pharmaceutical Microbiology**

Strain	ATCC® No.	Application
<i>Acholeplasma laidlawii</i> PG8	<a href="#">23206™</a>	EP 2.6.7 <i>Mycoplasmas</i> , USP Chapter <63>, <i>Mycoplasma</i> test
<i>Aspergillus brasiliensis</i> WLRI 034(120)	<a href="#">16404™</a>	EP 5.1.3 Efficacy of antimicrobial preservation; EP 2.6.1 Sterility; EP 2.6.27 Microbiological Control of Cellular Products; EP 2.6.12 Microbial examination of non-sterile products: Microbial Enumeration Tests; USP 37 Disinfectants and Antiseptics <1072> ; USP 37 Microbial limit tests – Dietary supplements - Preparatory testing, Growth Promotion Testing <2021>; <51> Antimicrobial Effectiveness Testing, USP 37-NF32, 2014.; USP 37, Microbiological Examination of Nonsterile Products: Microbial Enumeration Tests <61>; Sterility Tests <71> USP 37-NF32, 2014; JP 16 4.05 I Microbiological Examination of Non-sterile Products: Total Viable Aerobic Count; JP 16 4.06 Sterility test; JP 16 G4 Microorganisms: Preservatives-Effectiveness Test
<i>Bacillus atrophaeus</i> NRS 1221A	<a href="#">9372™</a>	EP 5.1.2 Biological indicators of sterilization; USP Chapter <1211> Sterilization and sterility assurance of compendial articles, USP 37-NF32, 2014; USP Chapter <1035> Biological Indicators, USP 37-NF32, 2014; USP Monographs: Biological Indicator for Dry-Heat Sterilization, Paper Carrier, USP 37-NF32, 2014; USP Monographs: Biological Indicator for Ethylene Oxide Sterilization, Paper Carrier, USP 37-NF32, 2014; JP 16 G4 Microorganisms: Terminal Sterilization and Sterilization Indicators
<i>Bacillus pumilus</i> E601	<a href="#">27142™</a>	EP 5.1.2 Biological indicators of sterilization; USP Chapter<1211>, Sterilization and sterility assurance of compendial articles
<i>Bacillus pumilus</i>	<a href="#">14884™</a>	EP 2.7.2 Microbiological assays of antibiotics
<i>Bacillus spizizenii</i> NRS 231	<a href="#">6633™</a>	EP 2.6.1 Sterility; EP 2.6.27 Microbiological Control of Cellular Products; EP 2.6.31 Microbiological Examination of Herbal Medicinal Products for Oral Use; EP 2.7.2 Microbiological assays of antibiotics; EP 2.6.12 Microbial examination of non-sterile products: Microbial Enumeration Tests; EP 2.6.13 Microbial examination; EP Monographs: Water for Injections; EP Monographs: Water for Preparation of Extracts; EP Monographs: Water, Highly Purified; EP Monographs: Water, Purified; USP 37 Microbial limit tests – Dietary supplements - Preparatory testing, Growth Promotion Testing <2021>; <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; USP 37, Microbiological Examination of Nonsterile Products: Microbial Enumeration Tests <61>; <71> Sterility Tests USP 37-NF32, 2014; JP 16 4.05 I. Microbiological examination of non-sterile products: total viable aerobic count; JP 16 4.06 Sterility test; JP 16 5.02 Microbial limit test for crude drugs; JP 16: Ampicillin sodium, Arbekacin sulfate, Bekanamycin sulfate, Cloxacillin sodium hydrate, Cycloserine, Dibekacin sulfate, Dicloxacillin sodium hydrate, Enviomycin sulfate, Josamycin, Josamycin propionate, Kanamycin monosulfate, Kanamycin sulfate, Kitasamycin, Kitasamycin acetate, Kitasamycin tartrate, Micronomicin sulfate, Midecamycin, Ribostamycin sulfate, Spiramycin acetate, Streptomycin sulfate, Sulbenicillin sodium, Teicoplanin, Tobramycin, Vancomycin hydrochloride
<i>Bacillus spizizenii</i> PRD 66	<a href="#">19659™</a>	USP Chapter <1072> Disinfectants and Antiseptics
<i>Bacteroides fragilis</i> VPI 2553	<a href="#">25285™</a>	EP 2.6.27 Microbiological Control of Cellular Products
<i>Bacteroides vulgatus</i>	<a href="#">8482™</a>	USP Chapter <71> Sterility Tests USP 37-NF32, 2014
<i>Bordetella bronchiseptica</i> NRRL B-140	<a href="#">4617™</a>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014
<i>Brevundimonas diminuta</i> FDA strain PCI 818	<a href="#">19146™</a>	USP Chapter <1211> Sterilization and sterility assurance of compendial articles. USP 37-NF32, 2014; JP 16 G4 Microorganisms: Terminal Sterilization and Sterilization Indicators
<i>Burkholderia cepacia</i> UCB 717	<a href="#">25416™</a>	USP Chapter <60> Microbiological Examination of Nonsterile Products: Tests for <i>Burkholderia cepacia</i> Complex
<i>Burkholderia cenocepacia</i> LMG 16656	<a href="#">BAA-245™</a>	USP Chapter <60> Microbiological Examination of Nonsterile Products: Tests for <i>Burkholderia cepacia</i> Complex
<i>Burkholderia multivorans</i> LMG 13010	<a href="#">BAA-247™</a>	USP Chapter <60> Microbiological Examination of Nonsterile Products: Tests for <i>Burkholderia cepacia</i> Complex
<i>Candida albicans</i> 132	<a href="#">2091™</a>	EP 2.6.1 Sterility; USP Chapter <1072> Disinfectants and Antiseptics; JP 16 5.02 Microbial Limit Test for Crude Drugs

**Table 4: Strains for Pharmaceutical Microbiology (continued)**

Strain	ATCC® No.	Application
<i>Candida albicans</i> 3147	<a href="#"><u>10231™</u></a>	EP 5.1.3 Efficacy of antimicrobial preservation; EP 2.6.1 Sterility; EP 2.6.27 Microbiological Control of Cellular Products; EP 2.6.12 Microbial examination of non-sterile products: Microbial Enumeration Tests; EP 2.6.13 Microbial examination of non-sterile products: Test for Specified Micro-organisms; USP Chapter <1072> Disinfectants and Antiseptics ; USP 37 Microbial limit tests – Dietary supplements - Preparatory testing, Growth Promotion Testing <2021>; <51> Antimicrobial Effectiveness Testing, USP 37-NF32, 2014. ; USP 37, Microbiological Examination of Nonsterile Products: Microbial Enumeration Tests <61>; USP 37, Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms <62>; Sterility Tests <71> USP 37-NF32, 2014; JP 16 4.05 I. Microbiological Examination of Non-Sterile Products: Total Viable Aerobic Count; JP 16 4.05 II. Microbiological Examination of Non-Sterile Products: Tests for Specified Micro-organisms; JP 16 4.06 Sterility Test; JP 16 5.02 Microbial Limit Test for Crude Drugs; JP 16 G4 Microorganisms: Preservatives-Effectiveness Tests
<i>Clostridium sporogenes</i> L.S. McClung 2006	<a href="#"><u>11437™</u></a>	EP 2.6.27 Microbiological Control of Cellular Products; EP 2.6.13 Microbial examination of non-sterile products: Test for Specified Micro-organisms; USP 37, Chondroitin Sulfate Sodium; USP 37, Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms <62>; Sterility Tests <71> USP 37-NF32, 2014; Dietary Supplements: Chondroitin Sulfate Sodium, USP 37-NF32, 2014; JP 16 4.05 II. Microbiological Examination of Non-Sterile Products: Tests for Specified Micro-Organisms; JP 16 4.06 Sterility Test
<i>Clostridium sporogenes</i>	<a href="#"><u>19404™</u></a>	EP 2.6.1 Sterility; EP 2.6.27 Microbiological Control of Cellular Products; EP 2.6.13 Microbial examination of non-sterile products: Test for Specified Micro-organisms; USP 37, Chondroitin Sulfate Sodium; USP 37, Microbiological Examination of Nonsterile Products: Test; USP 37, Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms <62>; <71> Sterility Tests USP 37-NF32, 2014; JP 16 4.05 II. Microbiological Examination of Non-Sterile Products: Tests for Specified Micro-Organisms; JP 16 4.06 Sterility Test
<i>Enterococcus hirae</i> FDA M19	<a href="#"><u>10541™</u></a>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; JP 16: Gramicidin
<i>Escherichia coli</i> MacLeod	<a href="#"><u>10536™</u></a>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; Tetracycline Hydrochloride and Novobiocin Sodium Tablets. USP 37-NF32, 2014
<i>Escherichia coli</i> AMC 198	<a href="#"><u>11229™</u></a>	USP Chapter <1072> Disinfectants and Antiseptics USP 37- NF32, 2014
<i>Escherichia coli</i> Crooks	<a href="#"><u>8739™</u></a>	EP 2.6.13 Microbial examination of non-sterile products: Test for Specified Micro-organisms; EP 2.6.31 Microbiological Examination of Herbal Medicinal Products for Oral Use; EP 5.1.3 Efficacy of antimicrobial preservation; USP 37, Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms <62>; USP 37 Microbial limit tests – Dietary supplements - Preparatory testing, Growth Promotion Testing <2021>; <51> Antimicrobial Effectiveness Testing, USP 37-NF32, 2014; USP 37, Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms <62>; JP 16 4.05 II. Microbiological Examination of Non-Sterile Products: Tests for Specified Micro-Organisms; JP 16 5.02 Microbial Limit Test for Crude Drugs; JP 16 G4 Microorganisms: Preservatives-Effectiveness Tests; JP 16 G8 Quality Control of Water for Pharmaceutical Use
<i>Escherichia coli</i> 397E	<a href="#"><u>9637™</u></a>	EP 2.7.2 Microbiological assays of antibiotics
<i>Geobacillus stearothermophilus</i>	<a href="#"><u>7953™</u></a>	EP 5.1.2 Biological indicators of sterilization; USP Chapter <1211> Sterilization and sterility assurance of compendial articles, USP 37-NF32, 2014; USP Monographs: Biological Indicators for Steam Sterilization, Paper Carrier, USP 37-NF32, 2014; USP Chapter <1229.1> Steam Sterilization by Direct Contact, USP 37-NF32, 2014; JP 16 G4 Microorganisms: Terminal Sterilization and Sterilization Indicators
<i>Geobacillus stearothermophilus</i> NCA 26	<a href="#"><u>12980™</u></a>	USP Chapter <1229.1> Steam Sterilization by Direct Contact, USP 37-NF32, 2014; USP Chapter <1035> Biological Indicators, USP 37-NF32, 2014; USP Monographs Biological Indicator for Steam Sterilization, Paper carrier, USP37-NF32, 2014
Hybrid Moloney/Amphotropic murine leukemia virus (Mo/A-MuLv) 4070A envelope strain	<a href="#"><u>VR-1448™</u></a>	USP Chapter:<1046> Cell and Gene Therapy Products - Analytical Methodologies, USP 37-NF32, 2014
Hybrid Moloney/Amphotropic murine leukemia virus (Mo/A-MuLv) 4070A envelope strain	<a href="#"><u>VR-1450™</u></a>	USP Chapter:<1046> Cell and Gene Therapy Products - Analytical Methodologies, USP 37-NF32, 2014

**Table 4: Strains for Pharmaceutical Microbiology (continued)**

Strain	ATCC® No.	Application
<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i> PCI 602	<a href="#">10031™</a>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; JP 16: Spectinomycin Hydrochloride Hydrate
<i>Kocuria rhizophila</i> FDA strain PCI 1001	<a href="#">9341™</a>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; Penicillamine USP 37-NF32, 2014; <71> Sterility Tests USP 37-NF32, 2014
<i>Lactobacillus leichmannii</i> 313	<a href="#">7830™</a>	USP Chapter <171> Vitamin B12 Activity Assay, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Tablets, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins Capsules, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins Oral Solution, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins Tablets, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Capsules, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Oral Solution, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins Tablets, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins with Minerals Capsules, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins with Minerals Oral Solution, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins with Minerals Tablets, USP 37-NF32, 2014
<i>Lactiplantibacillus plantarum</i> 17-5	<a href="#">8014™</a>	USP Chapter <91> Calcium Pantothenate Assay, USP 37-NF32, 2014; USP Chapter <441> Niacin or Niacinamide Assay, USP 37-NF32, 2014; Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Tablets, USP 37-NF32, 2014.; USP Dietary Supplements: Oil- and Water-Soluble Vitamins Capsules, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins Oral Solution, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins Tablets, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Capsules, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Oral Solution, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins Tablets, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins with Minerals Capsules, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins with Minerals Oral Solution, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins with Minerals Tablets, USP 37-NF32, 2014
<i>Methylobacterium extorquens</i> NBRC 15911	<a href="#">BAA-2500™</a>	JP 16 G8 Quality Control of Water for Pharmaceutical Use
<i>Micrococcus luteus</i> 130.21	<a href="#">10240™</a>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; JP 16: Bacitracin
<i>Kocuria rhizophila</i> FDA strain PCI 1001	<a href="#">9341™</a>	JP 16: Midecamycin Acetate, Rokitamycin, Zinostatin Stimalamer
<i>Mycobacterium smegmatis</i>	<a href="#">607™</a>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; JP 16: Bleomycin Hydrochloride, Bleomycin Sulfate, Peplomycin Sulfate
<i>Mycoplasma fermentans</i> PG 18	<a href="#">19989™</a>	USP Chapter <63> <i>Mycoplasma</i> test, EP 2.6.7 <i>Mycoplasmas</i>
<i>Mycoplasma gallisepticum</i> PG31	<a href="#">19610™</a>	EP 2.6.7 <i>Mycoplasmas</i> ; USP Chapter <63> <i>Mycoplasma</i> test
<i>Mycoplasma hyorhinis</i> BTS-7	<a href="#">17981™</a>	EP 2.6.7 <i>Mycoplasmas</i> ; USP Chapter <63> <i>Mycoplasma</i> test; JP 16 G3 Biotechnological/Biological Products: <i>Mycoplasma</i> Testing for Cell Substrates used for the Production of Biotechnological/Biological Products
<i>Mycoplasma hyorhinis</i> DBS 1050	<a href="#">29052™</a>	JP 16 G3 Biotechnological/Biological Products: <i>Mycoplasma</i> Testing for Cell Substrates used for the Production of Biotechnological/Biological Products
<i>Mycoplasma orale</i> CH 19299	<a href="#">23714™</a>	EP 2.6.7 <i>Mycoplasmas</i> ; USP Chapter <63> <i>Mycoplasma</i> test; JP 16 G3 Biotechnological/Biological Products: <i>Mycoplasma</i> Testing for Cell Substrates used for the Production of Biotechnological/Biological Products
<i>Mycoplasma pneumoniae</i> FH strain of Eaton Agent	<a href="#">15531™</a>	EP 2.6.7 <i>Mycoplasmas</i> ; USP Chapter <63> <i>Mycoplasma</i> test; JP 16 G3 Biotechnological/Biological Products: <i>Mycoplasma</i> Testing for Cell Substrates used for the Production of Biotechnological/Biological Products
<i>Mycoplasma synoviae</i> WVU 1853	<a href="#">25204™</a>	EP 2.6.7 <i>Mycoplasmas</i> ; USP Chapter <63> <i>Mycoplasma</i> test
<i>Pediococcus acidilactici</i>	<a href="#">8042™</a>	USP Chapter <115> Dexpanthenol Assay, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins Capsules, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins Oral Solution, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Capsules, USP 37-NF32, 2014; USP Dietary Supplements: Oil- and Water-Soluble Vitamins with Minerals Oral Solution, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins with Minerals Capsules, USP 37-NF32, 2014; USP Dietary Supplements: Water-Soluble Vitamins with Minerals Oral Solution, USP 37-NF32, 2014; Dietary Supplements: Water-soluble Vitamins Capsules, USP 37-NF32, 2014
<i>Penicillium chrysogenum</i> Wis. 49-133	<a href="#">11709™</a>	USP Chapter <1072> Disinfectants and Antiseptics

**Table 4: Strains for Pharmaceutical Microbiology (continued)**

Strain	ATCC® No.	Application
<i>Propionibacterium acnes</i> Gerath	<a href="#">11827™</a>	EP 2.6.27 Microbiological Control of Cellular Products
<i>Pseudomonas aeruginosa</i> PRD-10	<a href="#">15442™</a>	USP Chapter <1072> Disinfectants and Antiseptics
<i>Pseudomonas aeruginosa</i>	<a href="#">25619™</a>	USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014
<i>Pseudomonas paraeruginosa</i> R. Hugh 813	<a href="#">9027™</a>	EP 5.1.3 Efficacy of antimicrobial preservation; EP 2.6.1 Sterility; EP 2.6.27 Microbiological Control of Cellular Products; EP 2.6.13 Microbial examination of non-sterile products: Test for Specified Micro-organisms; EP 2.6.31 Microbiological Examination of Herbal Medicinal Products for Oral Use; EP Monographs: Water for Injections; EP Monographs: Water for Preparation of Extracts; EP Monographs: Water, Highly Purified; EP Monographs: Water, Purified; USP 37, Chondroitin Sulfate Sodium; USP, Microbiological Examination of Nonsterile Products: Test; EP 2.6.12 Microbial examination of non-sterile products: Microbial Enumeration Tests; EP 2.6.13 Microbial examination of non-sterile products: Test for Specified Micro-organisms; USP, Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms <62>; USP 37 Microbial limit tests – Dietary supplements - Preparatory testing, Growth Promotion Testing <2021>; <51> Antimicrobial Effectiveness Testing, USP 37-NF32, 2014; USP Chapter <60> Microbiological Examination of Nonsterile Products: Tests for <i>Burkholderia cepacia</i> Complex; USP 37, Microbiological Examination of Nonsterile Products: Microbial Enumeration Tests <61>; USP 37, Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms <62>; <71> Sterility Tests USP 37-NF32, 2014; JP 16 4.05 I. Microbiological Examination of Non-Sterile Products: Total Viable Aerobic Count; JP 16 4.05 II. Microbiological Examination of Non-Sterile Products: Tests for Specified Micro-Organisms; JP 16 4.06 Sterility Test; JP 16 G4 Microorganisms: Preservatives-Effectiveness Tests; JP 16 G8 Quality Control of Water for Pharmaceutical Use
<i>Pseudomonas protegens</i> 1	<a href="#">17386™</a>	JP 16 G8 Quality Control of Water for Pharmaceutical Use
<i>Saccharomyces cerevisiae</i>	<a href="#">2601™</a>	USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014
<i>Saccharomyces cerevisiae</i> NRRL Y-567	<a href="#">9763™</a>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; JP 16: Amphotericin B, Nystatin
<i>Salmonella enterica</i> subsp. <i>enterica</i>	<a href="#">13311™</a>	USP Microbial limit tests – Dietary supplements - Preparatory testing, Growth Promotion Testing <2021>
<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium CDC 6516-60	<a href="#">14028™</a>	EP 2.6.13 Microbial examination of non-sterile products: Test for Specified Micro-organisms; EP 2.6.31 Microbiological Examination of Herbal Medicinal Products; USP Chapter <62>, Microbiological Examination of Nonsterile Products; JP16 4.05 II. Microbiological Examination of Nonsterile Products.
<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Abony	<a href="#">BAA-2162™</a>	USP Chapter <62> Microbiological examination of non-sterile products: tests for specified microorganisms
<i>Serratia marcescens</i> PCI 1107	<a href="#">14756™</a>	USP Chapter <1211> Sterilization and sterility assurance of compendial articles. USP 37-NF32, 2014
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> PCI 1209/N	<a href="#">12692™</a>	Penicillin G Procaine and Novobiocin Sodium Intramammary Infusion. USP 37-NF32, 2014
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA	<a href="#">29737™</a>	USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; USP 37, Tetracycline Hydrochloride and Novobiocin Sodium Tablets
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> 3R7089 strain Oxford	<a href="#">9144™</a>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> FDA 209	<a href="#">6538™</a>	EP 2.6.1 Sterility testing; EP 2.6.27 Microbiological Control of Cellular Products; EP 2.7.2 Microbiological assays of antibiotics; EP 2.6.12 Microbial examination of non-sterile products: Microbial Enumeration Tests; EP 2.6.13 Microbial examination of non-sterile products: Test for Specified Micro-organisms; EP 2.6.31 Microbiological Examination of Herbal Medicinal Products for Oral Use; USP 37 Disinfectants and Antiseptics <1072> ; USP 37 Microbial limit tests – Dietary supplements - Preparatory testing, Growth Promotion Testing <2021>; <51> Antimicrobial Effectiveness Testing, USP 37-NF32, 2014.; USP Chapter <60> Microbiological Examination of Nonsterile Products: Tests for <i>Burkholderia cepacia</i> Complex; USP 37, Microbiological Examination of Nonsterile Products: Microbial Enumeration Tests <61>; USP 37, Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms <62>; <71> Sterility Tests USP 37-NF32, 2014; JP 16 4.05 I. Microbiological Examination of Non-Sterile Products: Total Viable Aerobic Count; JP 16 4.05 II. Microbiological Examination of Non-Sterile Products: Tests for Specified Micro-Organisms; JP 16 4.06 Sterility Test; JP 16 5.02 Microbial Limit Test for Crude Drugs, JP 16: Benzylpenicillin Potassium, Erythromycin, Erythromycin Ethylsuccinate, Erythromycin Lactobionate, Erythromycin Stearate, Fradiomycin Sulfate, Sodium fusidate; JP 16 G4 Microorganisms: Preservatives-Effectiveness Tests; JP 16 G8 Quality Control of Water for Pharmaceutical Use



**Table 4: Strains for Pharmaceutical Microbiology (continued)**

Strain	ATCC® No.	Application
<i>Staphylococcus epidermidis</i> FDA strain PCI 1200	<u>12228™</u>	EP 2.7.2 Microbiological assays of antibiotics; USP Chapter <81> Antibiotics – Microbial Assays, USP 37-NF32, 2014; JP 16: Gentamycin Sulfate
<i>Streptococcus pyogenes</i> Bruno	<u>19615™</u>	EP 2.6.27 Microbiological Control of Cellular Products
<i>Yersinia enterocolitica</i> subsp. <i>enterocolitica</i> 33114	<u>9610™</u>	EP 2.6.27 Microbiological Control of Cellular Products

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