Streptomyces sulphureus

Strain identifier

BacDive ID:	16031	**DOI:**	10.13145/bacdive16031.20190402.4
Type strain:	yes	**Designation:**	Gasperini IPV 510
Culture col. no.:	DSM 40104, ATCC 27468, CBS 646.72, IFO 13345, ISP 5104, NBRC 13345, NRRL B-1627, RIA 1306		

Sections

Name and taxonomic classification

Ref.: 9315	**Domain**	Bacteria
Ref.: 9315	**Phylum**	Actinobacteria
Ref.: 9315	**Class**	Actinobacteria
Ref.: 9315	**Order**	Actinomycetales
Ref.: 9315	**Family**	Streptomycetaceae
Ref.: 9315	**Genus**	Streptomyces
Ref.: 9315	**Species**	Streptomyces sulphureus
Ref.: 9315	**Full Scientific Name**	Streptomyces sulphureus (Gasperini 1894) Waksman 1953
Ref.: 9315	**Designation:**	Gasperini IPV 510
Ref.: 9315	**Type strain:**	yes

Prokaryotic Nomenclature Up-to-date (PNU)

Ref.: 20215	**Domain**	Bacteria
Ref.: 20215	**Phylum**	Actinobacteria
Ref.: 20215	**Class**	Actinobacteria
Ref.: 20215	Literature reference	Int. J. Syst. Bacteriol. 47:483*
Ref.: 20215	**Family**	Streptomycetaceae
Ref.: 20215	**Genus**	Streptomyces
Ref.: 20215	Taxonomical status	genus (AL)
Ref.: 20215	Literature reference	Int. J. Syst. Bacteriol. 30:225

Streptomyces sulphureus

Ref.: 20215	**Species**	Streptomyces sulphureus
Ref.: 20215	Taxonomical status	comb. nov. (VP)
Ref.: 20215	Literature reference	Int. J. Syst. Evol. Microbiol. 9:2007
Ref.: 20215	**Full Scientific Name**	Streptomyces sulphureus (Gasperini 1894) Waksman 1953 emend. Nouioui et al. 2018

Morphology and physiology

Ref.: 19805	**Cultivation medium used**	ISP 2
Ref.: 19805	**Colony color**	Yellow brown
Ref.: 19805	**Incubation period**	10-14 days
Ref.: 19805	**Cultivation medium used**	ISP 3
Ref.: 19805	**Colony color**	Brown
Ref.: 19805	**Incubation period**	10-14 days
Ref.: 19805	**Cultivation medium used**	ISP 4
Ref.: 19805	**Colony color**	Yellow
Ref.: 19805	**Incubation period**	10-14 days
Ref.: 19805	**Cultivation medium used**	ISP 5
Ref.: 19805	**Colony color**	Yellow
Ref.: 19805	**Incubation period**	10-14 days
Ref.: 19805	**Cultivation medium used**	ISP 6
Ref.: 19805	**Colony color**	Yellow
Ref.: 19805	**Incubation period**	10-14 days
Ref.: 19805	**Cultivation medium used**	ISP 7
Ref.: 19805	**Colony color**	Yellow
Ref.: 19805	**Incubation period**	10-14 days

Halophily

Salt	Tested relation	Salt conc.
NaCl	maximum	5 %

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Streptomyces sulphureus

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API 20E

API ID	518
ONPG	-
ADH (Arg)	-
LDC (Lys)	-
ODC	-
CIT	-
H2S	-
URE	-
TDA (Trp)	-
IND	-
VP	+
GEL	+
GLU	n.d.
MAN	n.d.
INO	n.d.
Sor	n.d.
RHA	n.d.
SAC	n.d.
MEL	n.d.
AMY	n.d.
ARA	n.d.
OX	n.d.
NO2	n.d.
N2	n.d.
MOB	n.d.
MAC	n.d.
OF-O	n.d.
OF-F	n.d.

Metabolite utilization

	Chebi ID	Metabolite	Utilization activity
Ref.: 19805	22599	Arabinose	+
Ref.: 19805	62968	Cellulose	-
Ref.: 19805	28757	Fructose	+
Ref.: 19805	17234	Glucose	+
Ref.: 19805	17268	Inositol	-

Ref.: 19805	29864	Mannitol	+
Ref.: 19805	16634	Raffinose	-
Ref.: 19805	26546	Rhamnose	+
Ref.: 19805	17992	Sucrose	-
Ref.: 19805	18222	Xylose	+

Ref.: 19805	**Medium Name (multicellularity)**	ISP 2
Ref.: 19805	**Multicellular complex forming ability**	yes
Ref.: 19805	**Multicellular complex name**	Aerial Mycelium
Ref.: 19805	**Multicellular complex color**	Yellow
Ref.: 19805	**Medium Name (multicellularity)**	ISP 3
Ref.: 19805	**Multicellular complex forming ability**	yes
Ref.: 19805	**Multicellular complex name**	Aerial Mycelium
Ref.: 19805	**Multicellular complex color**	Yellow
Ref.: 19805	**Medium Name (multicellularity)**	ISP 4
Ref.: 19805	**Multicellular complex forming ability**	yes
Ref.: 19805	**Multicellular complex name**	Aerial Mycelium
Ref.: 19805	**Multicellular complex color**	Yellow
Ref.: 19805	**Medium Name (multicellularity)**	ISP 5
Ref.: 19805	**Multicellular complex forming ability**	yes
Ref.: 19805	**Multicellular complex name**	Aerial Mycelium
Ref.: 19805	**Multicellular complex color**	Yellow

Ref.: 19805	**Medium Name (multicellularity)**	ISP 6
Ref.: 19805	**Multicellular complex forming ability**	yes
Ref.: 19805	**Multicellular complex name**	Aerial Mycelium
Ref.: 19805	**Multicellular complex color**	Yellow
Ref.: 19805	**Medium Name (multicellularity)**	ISP 7
Ref.: 19805	**Multicellular complex forming ability**	yes
Ref.: 19805	**Multicellular complex name**	Aerial Mycelium
Ref.: 19805	**Multicellular complex color**	Yellow
Ref.: 19805	**Spore description**	Formation of spore chains: spira, spore surface: smooth
Ref.: 19805	**Ability of spore formation**	yes

Culture and growth conditions

Ref.: 9315	**Culture medium**	GYM STREPTOMYCES MEDIUM (DSMZ Medium 65), 28°C
Ref.: 9315	**Culture medium growth**	yes
Ref.: 9315	**Culture medium link**	https://www.dsmz.de/microorganisms/medium/pdf/DSMZ_Medium65.pdf
Ref.: 19805	**Culture medium**	ISP 2
Ref.: 19805	**Culture medium growth**	yes
Ref.: 19805	**Culture medium composition**	Name: ISP 2 / Yeast Malt Agar (5265); 5265 Composition Malt extract 10.0 g/l Yeast extract 4.0 g/l Glucose 4.0 g/l Agar 15.0 g/l Preparation: Sterilisation: 20 minutes at 121°C pH before sterilisation: 7.0 Usage: Maintenance and Taxonomy Organisms: All Actinomycetes
Ref.: 19805	**Culture medium**	ISP 3
Ref.: 19805	**Culture medium growth**	yes

Ref.: 19805	**Culture medium composition**	Name: ISP 3; 5315 Composition Dog oat flakes 20.0 g/l Trace element solution (5314) 2.5 ml/l Agar 18.0 g/l Preparation: Oat flakes are cooked for 20 minutes, trace element solution and agar are added (in the case of non rolled oat flakes the suspension has to bee filtrated). Sterilisation: 20 minutes at 121°C pH before sterilisation: 7.8 Usage: Maintenance and taxonomy (e.g. SEM As liquid medium for metabolite production) Organisms: All Actinomycetes Trace element solution 5314 Name: Trace element solution 5314; 5314 Composition CaCl2 x H2O 3.0 g/l Fe-III-citrate 1.0 g/l MnSO4 0.2 g/l ZnCl2 0.1 g/l CuSO4 x 5 H2O 0.025 g/l Sodium tetra borate 0.2 g/l CoCl2 x 6 H2O 0.004 g/l Sodium molybdate 0.01 g/l Preparation: Use double destillated water. Sterilisation: 20 minutes at 121°C pH before sterilisation: Usage: Trace element solution for different media Organisms:
Ref.: 19805	**Culture medium**	ISP 4
Ref.: 19805	**Culture medium growth**	yes
Ref.: 19805	**Culture medium composition**	Name: ISP 4; DSM 547 Solution I: Difco soluble starch, 10.0 g. Make a paste of the starch with a small amount of cold distilled water and bring to a volume of 500 ml. Solution II: CaCO3 2.0 g K2HPO4 (anhydrous) 1.0 g MgSO4 x 7 H2O 1.0 g NaCl 1.0 g (NH4)2SO4 2.0 g Distilled water 500.0 ml Trace salt solution (see below) 1.0 ml The pH should be between 7.0 and 7.4. Do not adjust if it is within this range. Mix solutions I and II together. Add 20.0 g agar. Liquify agar by steaming at 100°C for 10 to 20 min. Trace element solution: FeSO4 x 7 H2O 0.1 g MnCl2 x 4 H2O 0.1 g ZnSO4 x 7 H2O 0.1 g Distilled water 100.0 ml
Ref.: 19805	**Culture medium**	ISP 5
Ref.: 19805	**Culture medium growth**	yes
Ref.: 19805	**Culture medium composition**	Name: ISP 5 (5323) Composition L-Asparagine 1.0 g/l Glycerol 10.0 g/l K2HPO4 1.0 g/l Salt solution (see preparation) 1.0 ml/l Agar 20.0 g/l Preparation: Salt solution 1.0 g FeSO4 x 7 H2O 1.0 g MnCl2 x 4 H2O 1.0 g ZNSO4 x 7 H2O in 100 ml water Sterilisation: 20 minutes at 121°C pH before sterilisation: 7.2 Usage: Maintenance and taxonomy Organisms: All Actinomycetes
Ref.: 19805	**Culture medium**	ISP 6
Ref.: 19805	**Culture medium growth**	yes
Ref.: 19805	**Culture medium composition**	Name: ISP 6 (5318) Composition Peptone 15.0 g/l Proteose peptose 5.0 g/l Ferric ammonium citrate 0.5 g/l Sodium glycerophosphate 1.0 g/l Sodium thiosulfate 0.08 g/l Yeast extract 1.0 g/l Agar 15.0 g/l Sterilisation: 20 minutes at 121°C pH before sterilisation: Usage: Production of melanoid pigments Organisms: All Actinomycetes
Ref.: 19805	**Culture medium**	ISP 7
Ref.: 19805	**Culture medium growth**	yes

Ref.: 19805	**Culture medium composition**	Name: ISP 7 (5322) Composition Glycerol 15.0 g/l L-Tyrosine 0.5 g/l L-Asparagine 1.0 g/l K2HPO4 0.5 g/l NaCl 0.5 g/l FeSO4 x 7 H2O 0.01 g/l Trace element solution 5343 1.0 ml/l Agar 20.0 Sterilisation: 20 minutes at 121°C pH before sterilisation: 7.3 Usage: Production of melanoid pigments Organisms: All Actinomycetes

Temperatures

Kind of temperature	Temperature
growth	28 °C
optimum	28 °C

Ref.: 9315
Ref.: 19805

Ref.: 9315	**Temperature range**	mesophilic
Ref.: 19805	**Temperature range**	mesophilic

Application and interaction

Ref.: 9315	**Biosafety level**	1 Risk group (German classification)
Ref.: 19805	**Biosafety level**	1 Risk group (German classification)

Molecular biology

	Sequence database	Sequence accession description	Sequence accession number	Sequence length(bp)	Associated NCBI tax ID	
Ref.: 20218	Marker Gene (GenBank Direct submission)	Streptomyces sulphureus 16S-23S ribosomal RNA gene spacer, complete sequence	U93350	300	1123321	*
Ref.: 20218	Marker Gene (DDBJ Direct submission)	Streptomyces sulphureus gene for 16S ribosomal RNA, partial sequence, strain: JCM 4835	D44397	120	1123321	*
Ref.: 20218	Marker Gene (DDBJ Direct submission)	Streptomyces sulphureus gene for 16S rRNA, partial sequence, strain: NBRC 13345	AB249965	1344	1123321	*
Ref.: 20218	Marker Gene (GenBank Direct submission)	Streptomyces sulphureus strain NRRL B-1627T 16S ribosomal RNA gene, partial sequence	DQ442546	1418	1123321	*

Strain availability

Ref.: 9315	**Culture collection no.**	DSM 40104, ATCC 27468, CBS 646.72, IFO 13345, ISP 5104, NBRC 13345, NRRL B-1627, RIA 1306

Ref.: 9315	**Strain history**	<- E.B. Shirling, ISP <- E. Baldacci, IPV 510 "strain Gasperini"

Associated Passport(s) in StrainInfo

Ref.: 20218	50550 - http://www.straininfo.net/strains/50550
Ref.: 20218	50547 - http://www.straininfo.net/strains/50547
Ref.: 20218	230235 - http://www.straininfo.net/strains/230235
Ref.: 20218	50552 - http://www.straininfo.net/strains/50552
Ref.: 20218	50555 - http://www.straininfo.net/strains/50555
Ref.: 20218	334072 - http://www.straininfo.net/strains/334072
Ref.: 20218	50561 - http://www.straininfo.net/strains/50561
Ref.: 20218	50563 - http://www.straininfo.net/strains/50563

References

Ref.: 9315	Leibniz Institut DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH; Curators of the DSMZ; DSM 40104
Ref.: 19805	Wink, J.: Compendium of Actinobacteria. HZI-Helmholtz-Centre for Infection Research, Braunschweig.
Ref.: 20215	D.Gleim, M.Kracht, N.Weiss et. al.: Prokaryotic Nomenclature Up-to-date - compilation of all names of Bacteria and Archaea, validly published according to the Bacteriological Code since 1. Jan. 1980, and validly published nomenclatural changes since.
Ref.: 20218	Verslyppe, B., De Smet, W., De Baets, B., De Vos, P., Dawyndt P. StrainInfo introduces electronic passports for microorganisms.. Syst Appl Microbiol. 37: 42-50 2014 (10.1016/j.syapm.2013.11.002, 24321274)

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