YEAST CULTURE *SACCHAROMYCES CEREVISIAE* THEIR BIOCHEMICAL AND MORPHOLOGICAL PROPERTIES AND PERSPECTIVE FOR BIOTECHNOLOGICAL USE

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Yeast *Saccharomyces cerevisie* (Meyen ex E.C. Hansen, 1838) play role in human activities. They are using in food industry, such as bakery products, including bread, wine industry: to start fermenting in grape must; pharmaceutical industry: receiving ethanol and in cosmetics. Our task isolation new yeast culture

Saccharomyces cerevisiae (Meyen ex E.C. Hansen, 1838) and after investigation to use them with a new properties. We did isolated wild yeast culture listed below. However we should be first of all identify isolated yeast and confirm each one if they in species attached to the *Sacharomyces cerevisie* (Meyen ex E.C. Hansen, 1838).

All isolated yeast culture identified as *Saccharomyces cerevisiae* and listed below strains are deposited in NCYC (National Collecton of Yeast Cultures) Norwich, United Kingdom in 2013.

Deposited yeast culture *Saccharomyces cerevisiae* (Meyen ex E.C. Hansen, 1838).

NCYC-3999 isolated from cultivar Rhiesling Rhenish;

NCYC-4003 yeast culture isolated from grape cultivar Merlot;

NCYC-4004 yeast culture isolated from grape cultivar Muscat Ottonel, Koblevo;

NCYC-4016 yeast culture isolated from grape cultivar Sauvignon, Tairovo;

NCYC-4018 yeast culture isolated from grape cultivar Yarilo, Tairovo.

NCYC-4022 yeast culture isolated from grape cultivar Aromatic, Tairovo;

NCYC-4023 yeast culture isolated from grape cultivar Sucholimanskiy 10 acres;

NCYC-4024 yeast culture isolated from grape cultivar Sucholimanskiy;

NCYC-4025 yeast culture isolated from grape cultivar Aligote, Tairovo;

NCYC-4026 yeast culture isolated from grape cultivar Odessa`s black, Tairovo;

NCYC-4027 yeast culture isolated from grape cultivar Odessa`s black 8 acres;

NCYC-4028 yeast culture isolated from grape cultivar Aligote 1012, Tairovo;

NCYC-4029 yeast culture isolated from grape cultivar Aligote 264, Tairovo;

NCYC-4030 yeast culture isolated from grape cultivar Aligote 263, Tairovo;

NCYC-4031 yeast culture isolated from grape cultivar Aligote, winery Koblevo;

NCYC-4032 yeast culture isolated from grape cultivar Ruby Jubilee, Tairovo;

NCYC-4033 yeast culture isolated from grape cultivar Pino Mine, Tairovo;

NCYC-4036 yeast culture isolated from grape cultivar White Muscat R-2, Tairovo;

NCYC-4052 yeast culture isolated from grape cultivar Cabernet-Sauvignon VCR-10;

NCYC-4053 yeast culture isolated from grape cultivar Cabernet-Sauvignon ICV-101;

NCYC-4054 yeast culture isolated from grape cultivar Merlot VCR-13, Tairovo;

NCYC-4055 yeast culture isolated from grape cultivar Merlot 347, Tairovo;

NCYC-4082 yeast culture isolated from grape cultivar Pinot red 1-84, Tairovo;

NCYC-4083 yeast culture isolated from grape cultivar Pinot red 872, Tairovo ;

NCYC-4084 yeast culture isolated from grape cultivar Pinot red VCR-9, Tairovo;

NCYC-4085 yeast culture isolated from grape cultivar Pinot gris clone 52, Tairovo;

NCYC-4086 yeast culture isolated from grape cultivar Pino gris VCR-5, Tairovo;

NCYC-4087 yeast culture isolated from grape cultivar Ruby Jubilee, Tairovo;

NCYC-4091 yeast culture isolated from grape cultivar Ruby Tairov, Tairovo;

NCYC-4092 yeast culture isolated from grape cultivar 56-13-1, Tairovo;

NCYC-4093 yeast culture isolated from grape cultivar Legend, Tairovo;

NCYC-4115 yeast culture isolated from grape cultivar Isabella, Koblevo;

NCYC-4116 yeast culture isolated from grape cultivar Merlot, Koblevo;

NCYC-4117 yeast culture isolated from grape cultivar Bastardo, Koblevo;

NCYC-4118 yeast culture isolated from grape cultivar Cabernet-Sauvignon;

NCYC-4119 yeast culture isolated from grape cultivar Muscat Hamburg, Koblevo;

NCYC-4120 yeast culture isolated from grape cultivar Riesling Rein, Koblevo;

NCYC-4121 yeast culture isolated from grape cultivar Sauvignon, Koblevo

NCYC-4122 yeast culture isolated from grape cultivar Rkaciteli, Koblevo;

NCYC-4123 yeast culture isolated from grape cultivar Odessa black, Tairovo;

NCYC-4124 yeast culture isolated from grape cultivar Odessa Muscat, Tairovo;

NCYC-4125 yeast culture isolated from grape cultivar Sauvignon, Tairovo;

NCYC-4126 yeast culture isolated from grape cultivar Sucholimanskiy, Tairovo;

NCYC-4127 yeast culture isolated from grape cultivar Cabernet-Sauvignon, Tairovo;

NCYC-4130 yeast culture isolated from grape cultivar Marsellie black, Tairovo.

Morphological properties of yeast *Saccharomyces cerevisiae* cells are in agar and broth length and breadth.

Cells: Shape – Short-Oval to Elongated.

Min Broth Breadth (μm) – 3

Max Broth Breadth (μm) – 7

Min Broth Length (μm) – 6

Max Broth Length (μm) – 17

Min Agar Breadth (μm) – 2

Max Agar Breadth (μm) – 3
Min Agar Length (μm) – 4
Max Agar Length (μm) – 15
Arrangement – single, in pairs, groups and chains.
Ring in Broth – Absent.
Ring colour – not available.
Pellicle in Broth – Absent.
Pellicle Appearance – Not available.
Pellicle Habitat – Not Available.
Budding – Multipolar.
Fission – Absent.

Filamentous Growth:

Pseudomicelium: Well Formed.
Pseudomycelium Branch – Regularly Branched.
Pseudomycelium Form – Candida + Mycocandida + Mycotoruloides.
Blastospores – Many.
Blastospore Shape – Round.
Blastospore Location: – Unknown.
Blastospore Habitat: – Unknown.
True Mycelium: Absent.
Clamp Connections: not available.

Asexual Spores:

Ballistospores: Absent.
Arthrospores: Absent.
Endospores: Absent.
Chlamydospores: Absent.

Sexual spores:

Ascospores: Absent.
Ascospore Shape: Not Available.
Ascospore Wall: Not Available.
Ascospores – No; per Ascus: Not Available.
Ascus Shape: Not Available.
Conjugation: Absent.
Teliospores: Absent.
Teliospore Shape: Not Available.

Miscellaneous:

Salt Tolerant: 10% – Latent.
Phenotype: Killer

Aerobic utilization and Growth – Sole Sources of Nitrogen:

$(NH_4)_2SO_4$ – test is positive;
KNO_3 – test is negative;
Ethylamine: test is negative;
Cadaverine: test is negative;
Lysine: test is negative;
Lipolytic: – test is negative;
cid production: – test is negative;
Growth 37°C: – test is positive;
Growth 40°C: – test is negative;
Urease activity: – test is negative;
Starch Production: – test is negative;
Acid Tolerant: – test is negative;

Biochemical properties of yeast culture *Saccharomyces cerevisiae* include aerobic and anaerobic utilization of carbohydrate and grow in different carbohydrates.

Most carbohydrate utilization and grow for yeast culture *Saccharomyces cerevisiae* such carbohydrate like: glucose, galactose, sucrose, maltose, raffinose, rhamnose, ethanol are positive. Other carbohydrate like: trechalose, lactose, melibiose, melezitose, xylose, L-arabinose, D-arabinose, ribose, erythritol, ribitol, galactitol, mannitol, sorbitol, inulin, soluble starch, glycerol are negative.

Semi-anaerobic fermentation include carbohydrates: glucose, galactose, sucrose, maltose, raffinose are positive. Negative result include: cellobiose, lactose, melibiose, melisitose, trehalose, xylose, soluble starch, inulin, glucoside.

Most carbohydrate such as: glucose, galactose, sucrose, maltose, raffinose, rhamnose are acceptable for fermentation. However in the practice for wine industry most of use such carbohydrate as sucrose. Several of isolated yeast strains *Saccharomyces cerevisiae* (Meyen ex E.C. Hansen, 1838) are perspective for biotechnological use.

References

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