Co-production of microbial oil and exopolysaccharide by the oleaginous yeast

*Sporidiobolus pararoseus* grown in fed-batch culture

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1 Thin layer chromatography

The preparation of samples was carried out according to the reports of Han et al.\textsuperscript{1}. When analyzing the fat soluble nutrients in \textit{S. pararoseus} oil by TLC, extracts were spotted on a silica gel plate (60GF254 plate; Amresco, Ohio, USA) with benzinum:ethyl acetate:acetone (1:1:1, v/v) solvent as developing solvent. The standard sample was used to compare spots with extracts.

2 The separation of the fat soluble nutrients in \textit{S. pararoseus} oil by High-performance chromatography (HPLC)

The major components were quantified by a high-performance liquid chromatography (HPLC; Hitachi L-2000, Japan) equipped with a photodiode array detector and using C\textsubscript{18} column (25 mm×4.6 mm; 4.6 μm particle size; Agilent, USA). Isocratic elution analysis was carried out with acetonitrile:tetrahydrofuran=60:40 described in our laboratory previous study\textsuperscript{2}.

3 The component identification by mass spectrometry (HPLC-MS)

The identifications of oils and carotenoids were analyzed by a mass spectrometry (MS) equipped with a Waters ACQUITY PDA detector and BEH C\textsubscript{18} column (2.1 mm×100 mm and filler diameter is 1.7 μm; Waters, USA). The detail of operation was carried out according to the description of Han et al.\textsuperscript{3}. 
**Table S1** The composition of exopolysaccharide produced by different yeasts

| Yeast strain                  | Molecular weight (kDa) | Monosaccharide composition                                                      | References |
|-------------------------------|------------------------|---------------------------------------------------------------------------------|------------|
| *Sporobolomyces salmonicolor* | AL 1                   | >1000 54.1% of glucose, 42.6% of mannose, and 3.3% of fucose                   | 4, 5       |
| *Cryptococcus laurentii*      | AL 100                 | 4.2 61.1% of arabinose, 15.0% of mannose, 12.0% of glucose, 5.9% of galactose, and 2.8% of rhamnose | 6         |
| *Cryptococcus flavus* A51     | 1010                   | 55.1% of mannose, 26.1% of glucose, 9.60% of xylose, and 1.90% of galactose     | 7         |
| *Rhodotorula acheniorum* MC   | Component 1: 310       | Component 1: 92.8% of mannose                                                  | 8         |
|                               | Component 2: 249       | Component 2: 90.6% of mannose                                                  |           |
| *Rhodotorula glutinis* KCTC 7989 | 100-380              | 85% of neutral sugars (mannose:fucose:glucose:galactose=67:2:1:1) and 15% of uronic acid | 9         |
| *Pichia (Hansenula) holstii*  | NRRL Y-2448            | 5000-3900 mannose:phosphorus:potassium=5:1:1                                  | 10, 11    |
| *Sporidiobolus pararoseus* JD-2 | 1300                  | galactose:glucose:mannose=16:8:1                                              | This study|
Figure S1. The scheme for co-production of exopolysaccharide and oil by *S. pararoseus* JD-2.
Figure S2. The sample and its thin-layer chromatography of oil produced by *S. pararoseus* JD-2.
Figure S3. The main compositions of oil produced by *S. pararoseus* JD-2 separated by isocratic elution (A)
and by gradient elution (B). Chromatographic peaks: peak 1 - Squalene; peak 2 - β-carotene; peak 3 - γ-carotene; peak 4-1-4-6 - Ergosterol ester; peak 5 - Torulene; peak 6 - Triglyceride; peak 7 - Free fatty acid; peak 8 - Ergosterol; peak 9 - Torularhodin. The red frame represents the same composition, and the springgreen frame represents data amplification.
Figure S4. HPLC-MS and UV spectrum of squalene (A), ergosterol (B) and ergosterol esters (C).
Figure S5. The main compositions of fat soluble nutrients in *S. pararoseus* oil separated by HPLC.
Supplementary References

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