

**NATIONAL BIORESOURCE DEVELOPMENT BOARD**

Dept. of Biotechnology  
Government of India, New Delhi

For office use:

**MARINE BIORESOURCES**

FORMS DATA ENTRY: Form- 1(general ) Ref. No.:  
(please answer only relevant fields; add additional fields if you require)

Fauna :	Flora	√ Microorganisms
General Category : Eukaryota , Fungi, Ascomycota (Ascosporogenous yeast)		
Scientific name & Authority: <i>Hansenula anomala</i> Shigeru Sakajo(1991) Common Name ( if available) : Imperfect state: <i>Candida pelliculosa</i> Redaelli (1925) Synonyms: <i>Candida beverwijkii</i> Novak et Vitez (1964) <i>Saccharomyces anomala</i> Hansen (1891) <i>Pichia anomala</i> Sakajo,S. (1999) Author( s): Same as given in synonyms. Status Ref. <b>The Yeast</b> ed. III (1984)		
Classification: Phylum: Ascomycota Sub- Phylum: Saccharomycotina Super class Class: Saccharomycetes Sub- Class Super Order: Order: Saccharomycetales Super Family Family: Saccharomycetaceae Sub-Family Genus: <i>Hansenula</i> Species: <i>anomala</i> Authority: Reference No. Biosci. Biochim. Biophys. Acta 1090(1):102-108(1991) Sakajo,S., et al, Biosci. Biotechnol. Biochem. 63(11):1889-1894(1999).		
Geographical Location: Latitude: Place: Bay of Bengal(Isolated from Benthic Sediment samples at 50 depth). Cochin Backwaters (Isolated from water samples at 1-10 m depth ) Longitude: State: EEZ of Eastern and Western Coast of India.		

Environment

Fresh water : Yes/ No

Habitat :

Salinity :

Brackish : Yes/ No

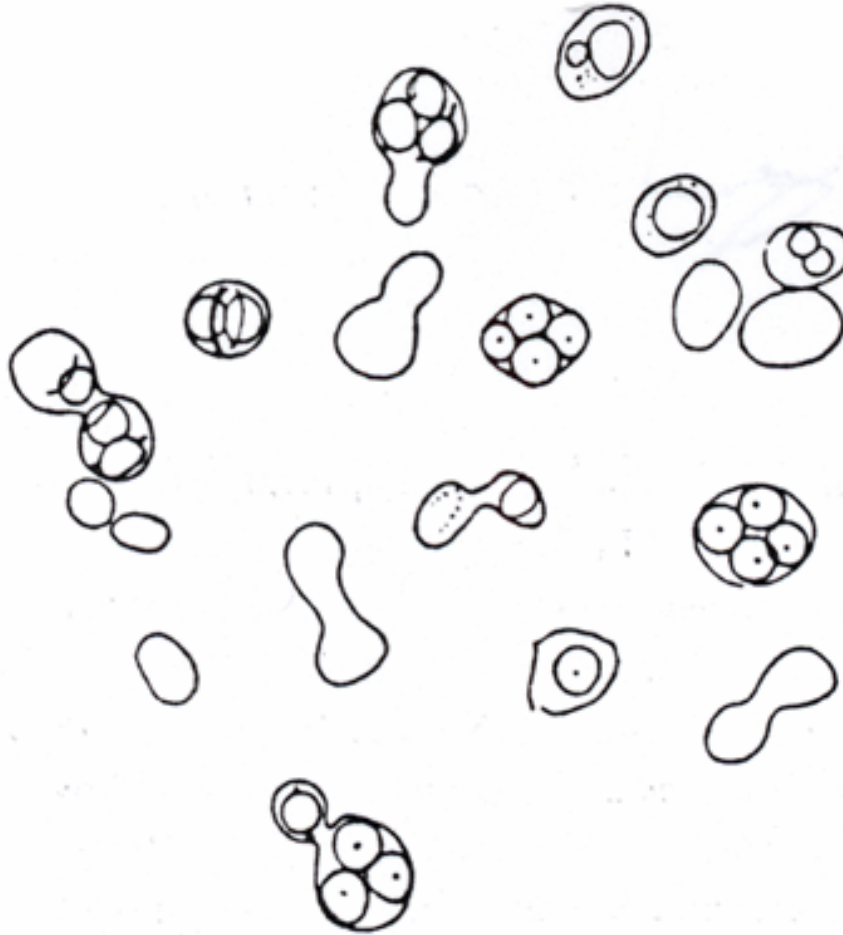
Migrations :

Temperature :

Salt water : Yes/ No

Depth range :

Picture (scanned images or photographs of adult / larval stages )



*H. anomala*

1 week on malt extract agar  
Cells with hat shaped ascospores

DATA ENTRY FORM: Form- 2(Fish / shellfish / others )  
(please answer only relevant fields ; add additional fields if you require)  
Form –1 Ref.No.:

#### IMPORTANCE

Landing statistics (t/y) : from                      to                      Place :                      Ref . No.:  
Main source of landing : Yes/ No                      Coast: east/ west  
Importance to fisheries :  
Main catching method :  
Used for aquaculture :yes/ never/ rarely  
Used as bait: yes/no/ occasionally  
Aquarium fish :yes/ no/ rarely  
Game fish : yes/ no  
Dangerous fish :poisonous/ harmful/ harmless  
Bioactivity : locally known/ reported/ not known                      Details:  
Period of availability: Throughout the year – yes/ no                      If no, months:

#### SALIENT FEATURES :

Morphological:

##### **Standard description of *Hansenula anomala***

**Growth on 5% Malt extract agar:** After 3 days at 25°C, the cells are spheroidal to elongate (1.9 – 4.1) X (2.1 – 6.1)  $\mu$  m and occur singly, in pairs, or in small clusters. Growth is butyrous and faintly tans in colour.

**Growth on the surface of Assimilation media:** Depending up on the strain, pellicles may or may not be present. When present, they vary from thin and smooth to thick and folded.

**Dalmau plate culture on Morphology agar:** After 7 days at 25°C growth under the cover glass may show abundant, branched pseudohyphae, although some strains form no pseudohyphae. None of the isolate forms true hyphae. Aerobic growth is white to tannish -white and generally butyrous. Some strains are smooth and glistening, others are dull, while others are some what chalky. Colony margins range from entire to lobed and occasionally show a fringe of pseudohyphae. The cultures usually produce a faintly pleasant odour.

**Formation of ascospores:** *Hansenula anomala* is heterothallic, but the sporogenous diploid form is usually isolated from nature. Diploid cells directly convert to asci and form one to four hat-shaped spores. Asci are dehiscent.

Spores were observed on 5% Malt extract agar, V8 agar and sterilized carrot slices.

Diagnostic characteristics: -

a) Biochemical

**Fermentation:-**

Glucose	+	Maltose	v
Galactose	v	Lactose	-
Sucrose	+ or w	Raffinose	- or + w

**Assimilation of carbon compounds**

Galactose	v	Raffinose	v	Erythritol	+
Sucrose	+	Soluble starch	+	Ribitol	v
Maltose	+	D-Xylose	v	D-Mannitol	+
Cellobiose	+	L-Arabinose	v	Succinic acid	+
Trehalose	+	D-Ribose	v	Citric acid	+
Lactose	-	L-Rhamnose	-	Inositol	-

**Additional carbon compounds tested :** L-Sorbose -, melibiose -, melezitose +, Inulin -, D-arabinose -,  $\alpha$ -methyl-D-glucoside +, salicin +, DL-lactic acid. +.

**Assimilation of nitrate: +**

**Growth in vitamin - free medium: +**

**Growth in 10% sodium chloride plus 5% glucose in yeast nitrogen base: v**

**Growth at 37 °C : v**

**G+C: 35.8-37.4 mol. %**

Ref. **The Yeast** ed. III (1984)

b) rRNA sequence

SQ Sequence 3717 BP; 1309 A; 561 C; 671 G; 1176 T; 0 other;

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Sex attributes:
Descriptive characters:

Meristic characteristics :	
Feeding habit:	
Main food :	
Feeding type :	
Additional remarks :	
Size and age :	
Maximum length (cm) (male / female/ unsexed )	Ref. No.:
Average length (cm) (male / female / unsexed )	Ref. No.:
Maximum weight : (g) (male / female / unsexed )	Ref.No.:
Average weight :(g) (male / female / unsexed )	Ref No.:
Longevity (y) (wild) : (captivity )	Ref. No.:
Length / weight relationships:	

Eggs and larvae: Characteristics: Abundance:	Ref . No.:
Biochemical aspects: Proximate analysis: moisture/ fat/ protein/ carbohydrate/ash Electrophoresis:	Ref. No. Ref. No.
<b>SPAWNING INFORMATION:</b> Locality: Season: Fecundity: Comment:	
<b>MAJOR PUBLICATIONS (INDIAN):</b> (include review articles, monographs, books etc.)  1.Proc.1 <sup>st</sup> Workshop on Scientific Results of Sagar Sampada, 1990 2.Ph.D. Thesis of N.Prabhakaran 1990 (CUSAT, Kochi) 3. .Biosci. Biochim. Biophys. Acta 1090(1):102-108(1991) 4. ,S., et al, Biosci. Biotechnol. Biochem. 63(11):1889-1894(1999).  <b>LIST OF INDIAN EXPERTS(Name, address, phone, fax, e-mail etc.)</b>  1.Dr (Mrs) Ranu Gupta, NIO,RC, PBox.1616, Kochi 682014. e-mail <a href="mailto:drrgupta@rediffmail.com">drrgupta@rediffmail.com</a> Res.Ph.0484 2538067 2 Dr.G.S.Prasad, IMTECH, Chandigarh.  <b>ACKNOWLEDGMENT:</b> (List of persons who contributed, modified or checked information) Assisted by Project Assistant Mrs.Maria Honey	