YEASTS

A news letter for persons interested in yeasts.

December 1950

Volume I, number 1

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This is the first issue of a communication which we hope will continue to be published and distributed for many years. Although the contributors for this number all reside in the United States, it is contemplated that soon contributions and distributions will be international in scope. The purpose of YEASTS is to provide a channel of communication for persons interested in research and teaching with yeasts. The suggestion has been made that the editorship should be rotated annually among persons in different regions of the United States. Dr. Mrak of the University of California has agreed to serve as associate editor this year to solicit information from various persons in the western states. Dr. Etchells is associate editor for the eastern states. It is evident that if such an organization is to develop on a democratic basis, some mechanism must be provided for the interested persons to vote on an organizational constitution.

It has already been suggested that perhaps we could ask the program committee of the Society of American Bacteriologists, or the Mycological Society, to group all the yeast papers in one session. Desires have been expressed for a meeting of the group at either the S.A.B. or the Mycological Society annual meetings.

In order to obtain an expression of opinion from persons on our mailing list, an opportunity is provided for indicating the desires of each person on the special sheet enclosed.

We plan to publish at least one more issue this year, probably in March or April. If we receive enough material from interested people, a third number might be prepared for distribution in early June. Any suggestions or comments will be greatly welcomed by myself or the associate editors.

Leslie R. Hedrick

Leslie R. Hedrick

December 6, 1950

I. Reported Research in Yeasts. (Institutions in alphabetical order, followed by contributor)

DETROIT INSTITUTE OF CANCER RESEARCH - Caroline Raut

Study of an ultra-violet produced cytochrome deficient mutant of S. cerevisiae and the possible use of tetrazolium in identification of presence or absence of cytoclerome.

ILLINOIS INSTITUTE OF TECHNOLOGY

Yaye Furutani is continuing her work with physiology of the Hansenula, as revised by Wickerham, especially the relation of vitamins to these yeasts. In her study, B vitamin requirements were determined for 46 strains of yeasts belonging to 15 species of the genus Hansenula. The diploid (D) yeasts, except H. beckii and H. canadensis which are parasitic, do not require added vitamins. Hansenula beckii and H. canadensis require biotin, thiamine and pyridoxine. The exclusively haploid (H) yeast Hansenula capsulata requires biotin, thiamine and pyridoxine. The predominantly haploid yeasts (H-D) Hansenula angusta and H. californica require biotin. The predominantly diploid (D-H) Hansenula subpelliculosa requires thiamine. Upon prolonged incubation of 21 days H. subpelliculosa and H. angusta were able to adapt themselves to grow in vitamins other than the single vitamin which they required for growth at first.

Harry Gordon is determining the vitamin requirements of all the known species of Rhodotorula.

Ray Crispen is working on the nitrogen requirements of the Hansenula

Elda Tsilenis is determining the most appropriate methods of producing yeasts from hydrolyzed olive cake residues.

John Bona is working with members of the Candida genus to discover their vitamin needs.

Leslie Hedrick is identifying some 250 yeasts collected in the summer of 1949 from fruit and fruit flies in an attempt to ascertain the relationship between the yeasts found on fruit and fruit flies associated with the fruit.

KANKAKEE STATE HOSPITAL, KANKAKEE, ILLINOIS - S. L. Bernheim

1. Effect of hyaluronidase on the capsule formation of Cryptococcus neoformans. 2. Penicillin as a growth factor and virulence-inducing agent for non-pathogenic species of Candida.

NORTHERN REGIONAL RESEARCH LABORATORY, PEORIA, ILLINOIS - L. J. Wickerham

Zymologists at the Northern Regional Laboratory have been engaged th past summer in the isolation of yeasts associated with bark beetles that attack coniferous trees. The beetles and yeasts form a highly destructive, symbiotic team which results in heavy losses of timber annually, especially in western forests. The beetles bore into the inner layers of the bark where the yeasts, which they carry, rapidly develop. The yeast growth seals off the flow of resinous sap which would otherwise trap the beetles in their

tunnels. Where beetle infestation is heavy, the yeasts stop the flow of sap so effectively that the tree dies. After the yeasts have developed, other fungi carried by the beetles grow into the sapwood which becomes stained and weakened by their activity. The larval and young adult stages of the beetles feed on the yeasts and other fungi that grow as a dense lining in the tunnels.

STATE COLLEGE OF WASHINGTON, PULLMAN, WASHINGTON - C. E. Skinner

Starch production by yeasts, yeasts on skin surfaces, nitrate reduction and nitrate utilization, Cryptococcus neoformans.

UNIVERSITY OF CALIFORNIA, BERKELEY - E. M. Mrak - Division of Food Technology

At present there are two students starting projects on yeasts. Martin Miller is studying yeasts occurring on the dried fruit beetle. Jack Recca is studying yeasts on citrus and citrus products.

Dr. Da Cunha, a population geneticist from Brazil, who has been working with Dr. Theodore Dobzhansky, spent the summer here working on yeasts from Drosophila collected from the Mather area near Yosemite Park. He conducted a number of feeding tests and observed that certain Drosophila had a preference for certain species of yeasts. This work will need a great deal of verification, however.

During the years 1947 to 1950 Dr. O. B. Williams of Texas isolated a number of yeasts from shrimp. These were sent to us for identification and study. We were surprised to find that relatively few genera and species were represented in a collection of thirty-five cultures. The four genera represented were: Trichosporon, Rhodotorula, Torulopsis, and Candida.

Work is under way here by Mr. El Tabey Shihata on yeasts of Drosophila, collected by Epling and others in connection with the studies on population genetics. A summary of his work, entitled "The Occurrence and Distribution of Yeasts in Drosophila" follows:

> In several years there have been several investigations of yeast flora occurring in various habitats, but very little has been reported on the isolation and identification of the yeasts associated with Drosophila. Yeasts play an important role in the nutrition of Drosophila, since under natural conditions they constitute an important source of food. Furthermore, Dobshansky has suggested that variations in yeast floras available to the flies may be responsible, in part, for seasonal changes in Drosophila populations in certain areas in California. Breeding places of the flies in Southern California are still unknown but may very well be associated with availability of certain yeasts.
>
> The present investigation has been conducted with the view of obtaining information relating to the ecology and taxonomy of yeasts, the role of yeasts in seasonal changes in fly populations and the breeding places of Drosophila.
>
> It was observed that yeast cells were killed rapidly upon passage through the alimentary tract of the fly kept at room temperature, and very slowly at 0° C. By use of the Gram stain, it was found that yeast cells lost their nucleic acid upon passing through the alimentary tract of the flies.

Two hundred and ten isolates were obtained from flies and other sources in Southern and Central California. These isolates comprised 12 genera, 44 species and 8 varieties. Saccharomyces, Zygosaccharomyces, Torulopsis and Kloeckera were the predominating genera. Hansenula and Debaryomyces were not encountered in a single case. Dipodascus uninucleatus was isolated for the second time from Drosophila. Validity of the controversial genus, Kloeckeraspora, was established.

Yeast flora of flies collected at any one time from any of the investigated localities in Southern and Central California was homogeneous. Usually one species of yeast, and occasionally 2 or 3, were isolated from a single fly, indicating the homogeneity of yeast flora of the feeding places of flies. Yeasts isolated from the flies collected at Pinon Flats and Keen Camp in Southern California varied from month to month. These variations coincided with fluctuations in Drosophila populations in these localities. Variation in ester production and nutritive values of the yeasts may have been responsible to a certain extent for these fluctuations.

Breeding places of Drosophila are still unknown, but results obtained indicate the possibility that the flies breed in association with oak and pine trees; perhaps in their exudates.

UNIVERSITY OF CALIFORNIA, DAVIS - Donald M. Reynolds - Div. of Bacteriology

Dr. Mortimer P. Starr and I are working on a problem involving the role of yeasts in animal nutrition, which has given some interesting preliminary results. As soon as the work progresses a bit further, we will send along a squib for YEASTS.

UNIVERSITY OF CALIFORNIA, DAVIS - John G. B. Castor - Div. of Viticulture

Fate of amino acids during alcoholic fermentation. Factors influencing production of fusel oils by yeasts during alcoholic fermentation (with Dr. J. F. Guymon). Yeast autolysis, effects on yeast metabolism.

UNIVERSITY OF ILLINOIS, URBANA - F. M. Clark

1. Nutritional studies on Rhodotorula including vitamin requirements and utilization of carbon and nitrogen compounds. 2. Pigment production by Rhodotorula. 3. Utilization of inositol by yeasts. 4. Relationship between p. aminobenzoic acid and folic acid in the nutrition of two species of Rhodotorula. 5. A study of so-called "food yeasts"--yields from various substrates, conditions of growth, products produced.

UNIVERSITY OF TEXAS, AUSTIN - O. B. Williams

Factors affecting ascospore formation by Torulaspora rosei. Cultures being studied include some strains which are very poor spore formers and some which are fairly good. Strains of organism supplied by Dr. J. Etchells.

UNIVERSITY OF WASHINGTON, SEATTLE - H. C. Douglas

H. L. Roman, Department of Botany, and H. C. Douglas have initiated a collaborative program in yeast genetics. One of our current interests is the significance of polyploidy as a cause of irregular genetic ratios. We are also interested in the relationship of nutrilites to the development of the cytochrome system, and in the enzymatic basis for mutation to galactose fermentation.

II. Recent or Unusual Discoveries.

ILLINOIS INSTITUTE OF TECHNOLOGY - L. R. Hedrick

1. In the fall of 1949 a yeast colony from concord grapes in my garden in Glen Ellyn contained an amoeba which apparently is parasitic upon the yeasts. The yeast-amoeba culture was maintained upon malt-extract agar for a year before the amoeba disappeared from the culture. The yeast appears to be a Rhodotorula which forms a yellow carotenoid pigment. Cultures were sent to Judo of the University of Illinois and Woodhead of the University of Michigan for identification of the protozoa, with no verdict as yet. Dr. Wickerham has directed my attention to a reference of yeast-amoeba association. It is: Negroni, Pablo and Fischer, Ida (Inst. Bact. Dept., Nacion. Hig., Buenos Aires). 1941. Ensayo sobre la biologia de "Vahlkampfia debilis" Jollos 1917, amoeba parasitica de una levadura y fonomenos de lisis semejantes a la bacteriofagica. Prensa med. Argentina 28 (5): 279-295.

2. One of the organisms collected from a fruit fly in Kirkland, Washington, is apparently a colorless alga, identified tentatively by Wickerham as a Prototheca. This indicates the need of persons collecting yeasts in the field to be familiar with not only fungi of various types but also the algae, especially the colorless varieties.

STATE COLLEGE OF WASHINGTON, PULLMAN - C. E. Skinner

Cultures, all asporogenous, many of them single-celled in 1947 and 1948 and having at that time no trace of a pseudomycelium on any of the usual media for inducing pseudomycelium formation, were retested recently. A few of the large collection produced copious pseudomycelium and some true mycelium. In other words, Torulopsis and Cryptococcus had turned into Candida, or as bacteriolgists would say, had gone rough. Paper to appear in Mycopathologia. Phylogeny of Candida will be discussed.

UNIVERSITY OF CALIFORNIA, BERKELEY - Edward A. Steinhaus

We are particularly concerned with the intracellular yeasts in insects. May I take the liberty of pointing out the interesting paper by Pant and Fraenkel in the October 27 issue of Science, concerning the functions of symbiotic yeasts of two insect species. I am sure that it would be worthwhile to call your readers' attention to this article.

UNIVERSITY OF WASHINGTON, SEATTLE - H. C. Douglas

We have found an ascus in which it was possible to demonstrate by genetic tests that the four spores were diploid. This evidence of polyploidy in yeast is furnishing a basis for an interpretation of the occurrence of irregular genetic segregations.

III. Unusual Cultures Available for Distribution.

SOUTHERN ILLINOIS UNIVERSITY, CABONDALE - Carl C. Lindegren

Our laboratory will be glad to supply mating types of a and alpha yeast cultures to any laboratory requesting them, with full instructions on how to obtain hybrids and ascospores.

IV. New Techniques or Methods.

KANKAKEE STATE HOSPITAL, KANKAKEE, ILLINOIS - S. L. Bernheim

Use of Littman's Oxgall Agar for the primary isolation of Cryptococcus neoformans from sputum, pleural exudate and spinal fluid.

V. Personal Items.

DETROIT INSTITUTE OF CANCER RESEARCH - Caroline Raut

The first of November, I transferred from the Department of Microbiology of Southern Illinois University to the Detroit Institute of Cancer Research.

ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO

Mrs. Gertrude Burke, who studied the yeasts from Hawaiian Fruitflies, J. Bact., 59, 481 (1950), is working on yeasts in Wallerstein Laboratories, New York City.

INDIANA UNIVERSITY, Bloomington - J. L. Stokes

After spending three fruitful years as research associate with Dr. van Niel at the Hopkins Marine Station, I left this past fall to take an associate professorship in the Department of Bacteriology at Indiana University.

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Items of Interest for YEASTS Vol. I, No.
1950-51

_____ _____
Institution
_____
Address
_____
_____

1. Scientific items of interest

   a. Reported research in yeasts

   b. Recent or unusual discoveries

   c. Unusual cultures available for distribution

   d. New techniques or methods

2. News of a personal nature

Questions To Be Answered by Persons Interested in Yeasts

1. ☐ Do you favor a formal organization with an official name, constitution, officers, etc.?

2. ☐ Do you favor an informal group without officers, name, and constitution?

3. ☐ Do you wish the editor and two associate editors to appoint a nominating committee for officers, to be elected by mail ballot?

4. ☐ Do you wish the editor and two associate editors to develop a constitution which would be distributed for comments with the next issue of YEASTS?

5. ☐ Do you wish the editor to request the S.A.B. program chairman to arrange all the yeast papers in one session?

6. ☐ Do you favor an informal demonstration of specimens, tea, and meeting following the presentation of papers at the S.A.B. meeting in Chicago, May 1951?

7. ☐ Do you favor a meeting of persons interested in yeasts at the S.A.B. meeting, even though there is no formal session for presenting papers dealing with yeasts?

8. ☐ Do you prefer that we channel papers into and have our meetings with the Mycological Society?

9. Any other comments:

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