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Yeast and Fermentation

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The human history seems to be inseparable from alcoholic beverages. Now in Japan, there is an unprecedented distilled spirits boom, and we can drink unique local-brand distilled spirits around the country. I marvel at the fact that some brands command premiums. The Japanese sake is produced by a combination of yeast type, water quality, temperature, humidity, fermentation, master brewer's skill, etc. to make rice malt. This is the reason for popular saying "rice malt, yeast mash, fermentation broth—the three important factors". If you visit the information center of Japanese sake "SAKE PLAZA" locating at Shinbashi, Tokyo, you can obtain data on local brewers around the country. In addition, to our joy, it offers the tasting of several kinds of local sake at low prices.

A famous god of brewing such as Japanese sake and soy sauce is Matsunoo Grand Shrine in Kyoto. The sake casks wrapped in rush mats of over one-hundred brands piled up in its precincts for dedication are spectacular.

In the West, the god of wine or fertility in Greek myths is Dionysus. In Roman myths, this god is called as Bacchus. Since ancient times, he has been a model for many paintings and sculptures as well as a character in literary works such as tragedy and comedy.

- For information about alcoholic beverages in Japan;
  http://www.japansake.or.jp/spirits/information/index.html

- For Jyo-u-sai at Matsunoo Grand Shrine (festival to pray for safety of brewers);
  http://www1.neweb.ne.jp/wa/matsuo/jyo-u-sai.htm

- For information about alcoholic beverages in the world;
  http://www.tastings.com/

In the Jewish world, there are Passover holidays. As it is a rule not to eat plump bread containing yeast during this period, it is also called as yeast-less holidays. Without yeast, there is no carbon dioxide bubble generated by fermentation that occurs in oxygen-deprived condition and it is unable to make plump and soft bread.

The number of baking classes and street-level bakeries that use wild yeasts for baking are increasing. The wild yeasts to be used there are made by cultivating multiple yeasts attached to fruits and grain crops such as rice and wheat using brewing technology. The reason for such popularity is that wild yeasts produce unique bread with aromas derived from fruits and grain crops.

On the contrary, baking companies uses single yeast plant best suited to their bread by cultivating a pure culture. In addition, they add ammonium chloride as source of nutrition to help fermentation of yeast plant, calcium sulfate and calcium phosphate tribasic for enrichment as additives of which the uses according to certain standard are approved by the Food Sanitation Law.

- For Passover holiday and Jewish festivals;
  http://www.myrtos.co.jp/index.html?url=http://www.myrtos.co.jp/topics/juda/juda03.html

・For wild yeast bread at Rakkenji temple;
http://www.asahi-net.or.jp/~be5y-ymnu/tnkb.html

・For types of baker's wild yeasts;
http://homepage3.nifty.com/koko~soven/b-koubo-menu.htm

・For breads in the world;
http://www.foods.co.jp/BAKERY/knowledge/world/

・For technology of bread production;
http://www.classofoods.com/ukindex.html

Taking advantage of fitness and beautification booms, the bran bath containing ferment is becoming popular. The ferment bath is prepared by naturally fermenting ferment powder blended with herbs, rice bran and sawdust. If being neck-deep in the bath for about 15 minutes, you will get sweaty in about 5 minutes. At 50 to 70C°, the sawdust is fermenting naturally. A temperature of 50 to 70C° is too hot to bathe in an ordinary way. In the ferment bath, however, it is no problem. During 15 minutes or so, you can sweat plenty and your body becomes warm from inside. At the same time, it increases your metabolism and body wastes and toxin will be eliminated in sweat. This improves the circulation of the blood and is good for beautification. In Europe, there is the beer bath that uses more yeast.

The fermentation phenomenon is utilized effectively in a wide variety of range: drinks and seasonings such as alcoholic beverage, yogurt, soybean paste, soy sauce; foods such as natto (fermented soybeans), bread and cheese; supplements; and the ferment bath.

・For ferment bath;
http://homepage2.nifty.com/kouso-biken/sub2.htm

・For beer bath;
http://www.ananova.com/news/story/sm_1415257.html

The lives of electronic components often depend on the temperature of the use environment according to the Arrhenius law. The aluminum electrolytic capacitor is a typical component that follows this law. As a matter of course, the life of the power supply that uses this component in large quantity also depends on the environmental temperature. Given this factor, the power supply with a replacement timing alert function that indicates the timing of replacement and outputs alarm by using a built-in circuit for calculating the life of power supply from the Arrhenius law and the data of the past has already been commercialized.

Uninterruptible power supply systems (UPS) often use lead batteries. The lead battery life is often specified as it completes when dropping to below the specified value for rated capacity by the method and number of charges and discharges. The lead battery completed its life becomes an industrial waste, and its environmental measure is a problem. To solve this problem, the UPSs adopting the methods that use electric double layer capacitor, flywheel generator, etc. and do not use lead batteries have been commercialized as the UPS that only responds to

instantaneous low voltage or brief power failure. The businesses those outsource the disposal of industrial wastes to the others must use the control list for industrial wastes called as manifest.

The manifest is used to figure out the flow of industrial wastes, and there are two types: electronic manifest and paper manifest.

The dependency on environmental conditions such as temperature, humidity and amount of oxygen is common to the reliability of electronics device and the fermentation.

・For aluminum electrolytic capacitor life;
http://www.cosel.co.jp/jp/products/qa/qa10.html
http://www.chemi-con.co.jp/catalog_j/TECH_NOTE/al_5.html

・For failure rate and Arrhenius law;
http://www.ami.ac.uk/courses/topics/0189_mfr/

・For replacement timing alert function;
http://www.fa.omron.co.jp/product_static/special/etc/reliabirity/01_1.html

・For methods of UPS and their comparison;
http://www.shizuki.co.jp/electric/v_various.html

・For industrial waste manifest system;
http://www.jwnet.or.jp/jwnet/seido_gaiyou.html

Sake cask wrapped in a rush mat

Bacchus

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1968 Graduated form Department of Engineering Science, Osaka University
～1984 Worked on developing Information Technology Device at Taga Works, Hitachi, ltd.
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