

JAPAN ROUNDUP

A new source of antibiotics may be the bacteria endogenous to insects. Research scientists at the Agricultural Resources Research Institute (Tsukuba) isolated the first of its kind from brown leaf hopper "flora." This antibiotic, called andrimid, is effective against the fungus that causes *shirahagare*, a disease of rice seedlings. Because andrimid was isolated from a

natural source it is expected to be biodegradable and safe to use.

Researchers in Tatsuhiro Ouchi's group at Kansai University (Suita City) have developed new polymers to use as slow-release-carriers for anti-cancer and other drugs. The new polymers (molecular weight 14,000-42,000) consist of maleic acid mono-

mers or mixtures of maleic and lactic acids. Anti-cancer drugs such as 5-fluorouracil are covalently attached to the polymer and then injected into the bloodstream. The polymers are taken up by cancer cells; as they degrade, they release the drug. In preliminary experiments in mice, encapsulating 5-fluorouracil significantly reduced its toxicity; the mice survived twice as long as those that were injected with drug alone.

Researchers at the Tokyo Institute of Technology have developed a method for synthesizing plastics using bacteria. The plastics, which can vary in elasticity, are biodegradable: they are completely destroyed after being buried in soil for six weeks. Developed by Yoshiharu Doi, the method uses hydrogen-fixing bacteria to convert 4-hydroxybutyric acid to polyesters, which accumulate in large amounts inside the bacteria under the proper culture conditions. Scientists extract the compound with chloroform and add methanol to precipitate it as a white powder. The polymer is gum-like and very elastic when 40-50 percent 4-hydroxybutyrate is used. Plastics of varying degrees of hardness can also be synthesized by using 1,4-butanediol.

The fact that the plastic is biodegradable may make it suitable for use in slow-release containers for pesticides or fertilizer. The bioplastics are also highly compatible with human tissues, and may find medical and cosmetic applications.

Scientists at Tokyo's Hokuko Chemical Industries (which manufactures pesticides among other products) have developed serum-free media for growing a pathogenic insect virus. The virus kills larvae of the Yoto moth, which damages soy beans, spring onions, and other vegetable crops. Although methods for growing this strain of baculovirus in insect-cell culture already exist, they all require fetal calf serum-containing media. If Hokuko scientists can scale-up the process economically to yield large quantities of virus, it could find use as a biological pesticide.

Prepared by Hal Plotkin and Ken Coleman, Biotechnology in Japan Newsservice, Japan Pacific Associates (Palo Alto, CA).

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Japan Pacific Associates
 467 Hamilton Avenue, Suite #2
 Palo Alto, CA 94301 • (415) 322-8441

