

Health & Science

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ERIC MENCHER / Staff Photographer
Penn's Patrick McGovern and Gretchen Hall work with residue from an Egyptian jar reckoned at more than 5,000 years old. The residue suggested an herbal melange.

Age-old Remedies

Penn scientists are using chemistry to learn the identity of herbs the ancient Egyptians mixed with wine to make sought-after medicines.

By Tom Avril
INQUIRER STAFF WRITER

Ancient Egypt was renowned for its prowess in the field of medicine, so much so that sick people went there from abroad in search of herbal remedies.

Archaeologists know that the herbs were administered in a potent blend with wine. But the identity of many of those medicinal additives is a mystery — their names recorded in hieroglyphics that have resisted modern efforts at translation.

Now, two University of Pennsylvania scientists have begun to crack the puzzle with chemistry.

In research published last week, the pair reported some of the earliest evidence of just what those long-ago physicians were prescribing.

One Egyptian clay jar, estimated to be more than 5,000 years old, yielded flaky residue that suggests a veritable apothecary of possible in-

See **HERBS** on D2



Residue from a 1,500-year-old jar yielded compounds likely from rosemary. Researchers want to know if the ancient herbalists came up with cures.



Samples scraped from an Egyptian clay jar, believed to be more than 5,000 years old, suggest an array of medicinal herbs had been steeped in wine: Coriander, senna, balm, savory, and more. It's unclear what diseases the herbs may have been used for. ERIC MENCHER / Staff Photographer

Egyptian herbalists: Were they onto something?

HERBS from D1

Ingredients: coriander, senna, germander, balm, and savory, among others. Samples scraped from the inside of a newer jar, just 1,500 years old, yielded compounds that likely came from rosemary.

The research, done in collaboration with a chemist from the U.S. Treasury Department, is more than a quest for history. Senior author Patrick McGovern, an "archaeochemist" at Penn's Museum of Archaeology and Anthropology, wants to know if the ancient herbalists came up with anything that really works.

Researchers at Penn's Abramson Cancer Center are similarly intrigued, and already are studying herbs identified in some of McGovern's previous experiments. A derivative of the wormwood plant, found in a 3,200-year-old fermented beverage from China, has shown some promise against tumor cells in preliminary lab studies.

"I think people should be open-minded" about ancient remedies, said Wafik S. El-Deiry, a Penn professor of medicine, genetics, and pharmacology, "because there may be hidden treasures."

The Egyptians and Chinese of old weren't trying to use their herbs against cancer, as far as McGovern knows. But some of their medicines are used today for the same purposes as long ago.

One such example is fennel, to combat indigestion, said Lise Manniche, an assistant professor of Egyptology at the University of Copenhagen. The Penn study found no evidence of fennel, but it is among those plants whose names have been translated from the ancient texts.

Manniche said the new evidence, published in the online edition of Proceedings of the National Academy of Sciences, represented an ideal marriage of chemistry and archaeology.

"It's absolutely fascinating that such a small amount [of residue] can give us so much information," said Manniche, who was not involved with the study.

Both clay jars came from Egyptian tombs. The 1,500-year-old vessel is owned by the Royal Ontario Museum in Toronto; the one that dated back five millennia was excavated by German archaeologists from the tomb of ruler Scorpion I.

In both cases, the wine residue was scraped from the jars and simply sent to McGovern by mail.



Wine jars from Scorpion I's tomb at Abydos, Egypt. This is the source of the 5,000-year-old jar with the herbal residue Penn's researchers have been studying. Courtesy of German Institute of Archaeology, Cairo

The chemist can't say exactly which herbs were used in the wine. The analysis of the older jar revealed only that the residue contained certain "terpenoid compounds" — the presence of which could be explained by one or more herbs.

It is also unclear which diseases they might have been used for.

Egyptian physicians recorded diseases and their treatments in hieroglyphics on papyrus documents that have survived to this day. But with many of the remedies, modern scholars know only that they consisted of some sort of plant — signified by a picture of a leaf at the end of the name, Manniche said.

McGovern's coauthors were Penn research associate Gretchen Hall and Armen Mirzozian, a senior chemist at the Treasury Department's Alcohol and Tobacco Tax and Trade Bureau.

Mirzozian's usual work involves testing modern alcoholic beverages for contaminants or labeling problems. The analysis of the ancient wine residue was performed with mass spectrometers and other equipment at the bureau's facility in Maryland.

Hall, formerly a chemist at Mobil Oil, jokes that her part-time work at Penn's museum beats retirement.

"It's better than going to the gym, or knitting," she said.

McGovern, by the way, is hoping his own retirement does not come soon. Late last year, the museum said it planned to cut up to 18 jobs, including his, citing financial woes. Last week, his situation was still up in the air.

In addition to looking at ancient herbs for their medicinal value, McGovern has studied them for their taste.

He has shared his findings with Dogfish Head brewery in Delaware, working with it to reproduce certain beverages of old. One of the biggest hits with customers has been Midas Touch, a mixture of grape wine, barley beer, and honey mead. The recipe is based on analysis of vessels from the reputed tomb of King Midas, ruler of the Phrygians.

Though the evidence from Midas and from the Egyptians comes from tombs, Manniche and McGovern said it's pretty clear that these beverages were consumed by the living.

"What was good in life was definitely good in death," McGovern said.

And, he hopes, good for life thousands of years later.

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