VZV and treat the ones that show positive results with antiviral medicines. This promotes a rapid recovery, easing of pain and symptoms, and reduces chances of complications from zoster.

Screening of high-risk patients could be incorporated as part of a regular physical exam. These patients include the elderly, pregnant women, and immune-compromised individuals. In these patients, VZV can be a life-threatening disease. In both high- and low-risk patients, early detection and treatment with antiviral drugs can dramatically decrease or even eliminate the clinical manifestation of disease.

This work was done by Duane L. Pierson of Johnson Space Center; Satish K. Mehta of EASI; Randall J. Cohrs and Don H. Gilden of the University of Colorado Health Science Center; and Robert E. Harding, independent consultant. Inquiries concerning rights for the commercial use of this invention should be addressed to David Poticha at the University of Colorado, david.poticha@cu.edu. Refer to MSC-24451-1.

Improved Devices for Collecting Sweat for Chemical Analysis

Unlike prior devices, these would enable measurement of volumes of specimens.

Lyndon B. Johnson Space Center, Houston, TX

Improved devices have been proposed for collecting sweat for biochemical analysis — especially for determination of the concentration of Ca^{2+} ions in sweat as a measure of loss of Ca from bones. Unlike commercially available sweat-collection patches used previously in monitoring osteoporosis and in qualitative screening for some drugs, the proposed devices would not allow evaporation of the volatile chemical components (mostly water) of sweat. Moreover, the proposed devices would be designed to enable determination of the volumes of collected sweat. From these volumes and the quantities of Ca^{2+} and/or other analytes as determined by other means summarized below, one could determine the concentrations of the analytes in sweat.

A device according to the proposal would be flexible and would be worn like a commercial sweat-collection patch. It would be made of molded polydimethylsiloxane (silicone rubber) or other suitable material having properties that, for the purpose of analyzing sweat, are similar to those of glass. The die for molding the silicone rubber would be fabricated by a combination of lithography and electroplating. The die would reproducibly form, in the silicone rubber, a precisely defined number of capillary channels per unit area, each channel having a precisely defined volume. Optionally, electrodes for measuring the Ca^{2+} content of the sweat could be incorporated into the device.

The volume of sweat collected in the capillary channels of the device would be determined from (1) the amount of light or radio waves of a given wavelength absorbed by the device and (2) the known geometry of the array of capillary channels. Then, in one of two options, centrifugation would be performed to move the sweat from the capillary tubes to the region containing the electrodes, which would be used to measure the Ca^{2+} content by a standard technique. In the other option, centrifugation would be performed to remove the sweat from the device to make the sweat available to other analytical instruments for measuring concentrations of substances other than Ca^{2+}.

This work was done by Daniel L. Feeback of Johnson Space Center and Mark S. F. Clarke of the University of Houston. Further information is contained in a TSP (see page 1).

In accordance with Public Law 96-517, the contractor has elected to retain title to this invention. Inquiries concerning rights for its commercial use should be addressed to:

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Refer to MSC-23625-1, volume and number of this Medical Design Briefs *issue, and the page number.*