Medical Xpress

A trip to the candy store might help ward off rare, but deadly infections

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As it turns out, children were not the only ones with visions of sugar plums dancing in their heads over this past holiday season. In a new research report published in the January 2010 issue of the *Journal of Leukocyte Biology*, a team of scientists from the University of Texas Medical Branch and Shriners Hospitals for Children show how a compound from licorice root (glycyrrhizin from *Glycyrrhiza glabra*) might be an effective tool in battling life-threatening, antibiotic-resistant infections resulting from severe burns. Specifically, they found that in burned mice, glycyrrhizin improved the ability of damaged skin to create small proteins that serve as the first line of defense against infection. These proteins, called antimicrobial peptides, work by puncturing the cell membranes of bacteria similar to how pins pop balloons.

"It is our hope that the medicinal uses of glycyrrhizin will lead to lower death rates associated with infection in burn patients," said Fujio Suzuki, Ph.D., one of the researchers involved in the work. Suzuki also said that more research is necessary to determine if this finding would have any implications for people with cystic fibrosis, who can develop *Pseudomonas aeruginosa* infections in their lungs.

To make this discovery, Suzuki and colleagues used three groups of mice. The first group was normal, the second group was burned and untreated, and the third group was burned and treated with glycyrrhizin. The skin of the untreated burned mice did not have any detectable antimicrobial peptides that prevent bacteria from growing and spreading, but the normal mice did. The skin of the untreated burned mice also had

immature myeloid cells, which indicate an inability of the skin to produce antimicrobial peptides needed to prevent infection. The mice treated with glycyrrhizin, however, were more like the normal mice as they had the antimicrobial peptides and no immature myeloid cells.

"Burns are the most painful of all injuries," said John Wherry, Ph.D., Deputy Editor of the Journal of Leukocyte Biology, "and the deadly *Pseudomonas* infections that can result from severe burns do more than add insult to those injuries. This research should serve as an important stepping stone toward helping develop new drugs that help prevent or treat *Pseudomonas*."

More information: Tsuyoshi Yoshida, Shohei Yoshida, Makiko Kobayashi, David N. Herndon, and Fujio Suzuki. Glycyrrhizin restores the impaired production of β-defensins in tissues surrounding the burn area and improves the resistance of burn mice to Pseudomonas aeruginosa wound infection. J Leukoc Biol 2010 87: 35-41. www.jleukbio.org/cgi/content/abstract/87/1/35

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