International Aspirin® Award 2004

Old faithful blazes new trails

Acetylsalicylic acid has the potential to support treatment of the dangerous pathogen Staphylococcus aureus. Furthermore, the active igredient in Aspirin® protects blood vessel cells and could therefore play a role in the prevention of cardiovascular disorders. These discoveries were made by Dr. Nina Grosser and Dr. Leon Iri Kupferwasser, who were honored with the 2004 International Young Researcher's Aspirin® Award for their work.

Acetylsalicylic acid (ASA), the active ingredient of Aspirin®, was developed by Bayer more than 100 years ago, yet today it is still regarded as a therapeutic agent with enormous potential that even now has not been fully researched. Combating pain, inhibiting inflammation and preventing myocardial infarction – these effects of ASA make it a multi-purpose weapon in the battle against ailments ranging from headache to cardiovascular disease. Scientists have now discovered another talent of the active ingredient of Aspirin®: it may be able to reduce the aggressiveness of the bacterium Staphylococcus aureus, a pathogen which causes diseases such as wound infections, heart valve infections and pneumonia. Dr. Leon Iri Kupferwasser, a specialist in cardiology, conducted research into this theory at the UCLA School of Medicine at the Cedars-Sinai Medical Center in Los Angeles, California. Salicylic acid, the substance into which acetylsalicylic acid is converted in the body, intervenes directly into the metabolic processes of the bacteria, preventing accumulation of the pathogen in human cells in vitro and reducing the formation of bacterial toxins by up to 50 percent.

"Bacteria are increasingly becoming resistant against antiibiotics nowadays," reports Kupferwasser, "and that's especially true in the case of Staphylococcus aureus." Resistant bacterial strains now exist against every antibiotic used in therapy. "In this new approach, the bacteria are no longer killed," explains the cardiologist. "Instead, their pathological properties are simply suppressed." The experimental findings suggest that acetylsalicylic acid could assume this role in the future and be administered concomitantly with an antibiotic.

ASA can do more, however. Dr. Nina Grosser, a pharmacist from the Martin Luther University in Halle-Wittenberg, Germany, has elucidated a biochemical process which could allow the active ingredient of Aspirin® to make a substantial contribution to the prevention of endothelial damage. In vascular cells, ASA causes increased production of the messenger substance nitric oxide (NO), whose antioxidative properties activate genes and enzymes, inhibiting oxygen radicals and other highly reactive substances. These radicals are the first stage in the process that causes damage to the vascular cells and contributes to the development of arteriosclerosis. Grosser is convinced that ASA can protect the vascular cells. "This newly discovered signal path is therefore an interesting approach to arteriosclerosis prevention and could contribute to cardiovascular protection," she says.

In recognition of their outstanding work, Kupferwasser and Grosser were honored with the 2004 International Aspirin® Award. This prize, which is sponsored by Bayer, has been awarded annually since 1995 by an independent jury comprising ten internationally renowned medical scientists. The award is presented to scientists who have made a considerable contribution to experimental research into acetylsalicylic acid.

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Comprehensive information about Aspirin® and its therapeutic significance.

Honored: Dr. Leon Iri Kupferwasser and Dr. Nina Grosser received the 2004 International Aspirin® Award in recognition of their work into acetylsalicylic acid.