'First, make sure your information is correct'. So should medical writers." We apologize for this error. Medical editors should get their Latin straight too.—Ed.

Antibiotic-like action of essential fatty acids

It is now well recognized that a diet rich in essential fatty acids, such as linoleic, γ-linolenic, dihomo-γ-linolenic and eicosapentanoic acid, can prevent platelet aggregation and atherosclerosis, lower blood pressure and protect against myocardial infarction, stroke and cancer.[1-6] But relatively little attention has been given to the fact that essential fatty acids also have antibacterial, antifungal and antiviral action.

Lacey and Lord[7] showed that linolenic acid rapidly killed cultures of *Staphylococcus aureus* applied to the skin and suggested a therapeutic role for naturally occurring free fatty acids. In an extension of this study, McDonald and colleagues[8] showed that hydrolysed linseed oil, which contains 52% linolenic acid, and pure linolenic acid can inactivate methicillin-resistant *S. aureus*. In a randomized controlled trial neonates given raw human milk had a markedly lower incidence of infection than those who received pasteurized human milk and formula.[9] The lower incidence of infection was likely due to γ-linolenic acid, which is present in substantial amounts in raw human milk.[10,11]

In a study of the mechanism of the accumulation of antimicrobial stress metabolites in potato tubers due to mycelial extracts from *Phytophthora infestans*, Bostock and associates[12] discovered that the most active elicitors of stress metabolites in the extracts were eicosapentanoic acid and arachidonic acid. These essential fatty acids were found in either free or esterified form in all the active fractions of the extracts. The wound hormone traumatin is an oxidation product of linoleic or linolenic acid.[12] These findings suggest that, at least in potato tubers, fungitoxic sesquiterpenes are elicited by eicosapentanoic acid and arachidonic acid. These fatty acids may have similar properties in defence against fungal diseases in humans.

Kohn and coworkers[13] showed that linoleic acid and arachidonic acid can inactivate animal herpes, influenza, Sendai and Sindbis viruses within minutes of contact. Human lymphocytes are believed to contain large amounts of esterified arachidonic acid and, with appropriate stimulation, to release free arachidonic acid and possibly γ-linolenic acid.[14] The released fatty acids may be used in the body to inactivate viruses and to stimulate the production of fungitoxic substances. I have shown that prostaglandin E1, a metabolite of γ-linolenic acid, can enhance cell-mediated immune responses.[15] Thus, it is likely that essential fatty acids such as linoleic, linolenic, eicosapentanoic and arachidonic acid have antibacterial, antifungal, antiviral and immunostimulating properties.

It would be interesting to use these essential fatty acids with or without antibiotics in bacterial, viral and fungal infections. In conditions such as herpes simplex and herpes zoster and, perhaps, in localized bacterial and fungal infections, essential fatty acids could be applied locally or given subcutaneously. Evening primrose oil, fish oil and linseed oil, which are rich in linoleic, linolenic and eicosapentanoic acid, may be used. These oils are nontoxic and are easily absorbed from the skin and mucous membranes.

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Evaluation of sponging to reduce body temperature

From extensive experience with patients suffering from heat exhaustion in Hong Kong my colleagues and I have found that sponging with tepid water alone is almost useless in reducing body temperature. On the other hand, sponging can be effective, after approximately 10 min-

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