

this study, it is concluded that a single 1 g dose of ciprofloxacin is as effective as a single 300 mg dose of doxycycline in terms of clinical response, and that ciprofloxacin is more efficient in eradicating *V. cholerae* from faeces.



Inhibition of Cholera Toxin-Induced Salt and Water Secretion By Short-Chain Fatty Acids in Vivo

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Objective: Determine the effect of SCFAs on cholera toxin-induced colonic secretion. Short-chain fatty acids (acetate, propionate, butyrate) produced by the fermentation of unabsorbed carbohydrates by the colonic bacteria have been shown to stimulate Sodium chloride absorption in the isolated colonic epithelium *in vitro*.

Methods: The effects of SCFAs on cholera toxin (CT)-induced colonic ion and water secretion in adult rabbit have been determined in this study using a perfusion technique with polyethylene glycol as a non-absorbable marker. Facilities of the ICDDR,B's Dhaka-based hospital, the Clinical Research and Service Centre, and its Animal Resources Branch, were used for this study.

Results: The study indicates that an 18-hour exposure to purified cholera toxin (5-100 µg) resulted in colonic water and electrolyte secretion in a dose-dependent manner. Perfusion with different SCFAs significantly ($p < 0.001$) inhibited net colonic water secretion; the rates ($\mu\text{l}/\text{min}^{-1}.\text{cm}^{-1}$) of inhibition being 99%, 94%, and 86% for butyrate (30 mM), propionate (60 mM), and acetate (90 mM) respectively. The rates of net sodium secretion were also significantly less ($p < 0.01$) in the SCFA-treated colon than those treated with SCFA-free solution (Na^+ , mean \pm SD, $\mu\text{M}/\text{min}^{-1}.\text{cm}^{-1}$: 5.17 \pm 0.95, 7.31 \pm 0.65, 12.7 \pm 0.8 for butyrate, propionate, and acetate respectively; and 80.2 \pm 20.6 for controls). Butyrate (30 mM) induced the highest inhibition of Na^+ and water secretion followed by propionate and acetate. All 3 SCFAs significantly ($p < 0.01$) inhibited Cl^- secretion, whereas only butyrate and propionate inhibited K^+ secretion. There was no significant alteration of the colonic HCO_3^- secretion by the SCFAs, and none was able to reverse colonic secretion into net absorption.

Conclusions: SCFAs stimulate salt and water absorption from CT-stimulated colon and may be useful as absorption-promoting agents in oral rehydration solutions.



Oxidative Stress in Patients With Severe Cholera

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Objective: Determine the adverse metabolic effects of oxidative stress in cholera. Oxidative stress is an adverse metabolic condition induced by the Reactive Oxygen Species (ROS). These ROS are produced and catabolized by specific enzymes during the normal course of metabolism. Lipid peroxidation due to ROS occurs during infection and malnutrition leading to oxidative stress and chemical injuries to the tissues. However, nothing is known about the adverse metabolic effects of oxidative stress in cholera.

Methods: To assess the degree of oxidative stress and lipid peroxidation in patients with severe cholera, the present investigators determined the faecal contents of thiobarbituric acid-reacting substances (TBARS), an index of lipid peroxidation, in 6 adults with severe dehydrating diarrhoea due to *Vibrio cholerae* infections and in 5 healthy adult volunteers. These volunteers were drawn each year from the 100,000 diarrhoea patients attending the ICDDR,B's Dhaka-based hospital, the Clinical Research and Service Centre.