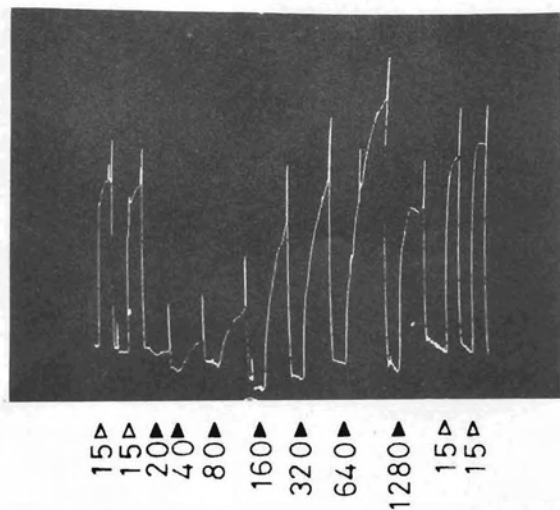


LETTER TO THE EDITOR

SPASMOGENIC EFFECT OF LITHIUM CARBONATE ON SMOOTH MUSCLES OF GUINEA-PIG ILEUM

( Received on March 25, 1992 )

Lithium carbonate is a commonly used compound in therapy and prophylaxis of manic-depressive illness. Some of the side effects of this drug include nausea, vomiting, diarrhoea and abdominal discomfort. The guinea-pig ileum model was used in the present study to understand underlying mechanism(s) of these side effects.



△ ng/ml of acetylcholine

▲ µg/ml of lithium carbonate

Fig. 1 : Contractile response of guinea-pig ileum to different concentrations of lithium carbonate and to acetylcholine.

The contractile responses of the guinea-pig ileum in the presence of different concentrations of lithium carbonate were recorded on a kymograph and the ED<sub>50</sub> value was obtained from the dose response curve. It produced contractions of the ileum in a dose-dependent manner (Fig. 1). The threshold dose of lithium carbonate ranged from 10 to 20 µg/ml and the ED<sub>50</sub> value ranged from 130 to 160 µg/ml. The tissue took about 1 min to produce maximum contraction with lithium carbonate while 30 sec were sufficient to produce maximum contraction with acetylcholine. The slower response to lithium could be due to its poor penetration into cells.

Lithium has been shown to relax the smooth muscles of respiratory tract (1, 2) as well as inhibit the contractions of rat uterus induced by angiotensin and acetylcholine (3). The current observation, on the other hand, shows that unlike smooth muscles of above organs, the intestinal smooth muscles contract in response to lithium carbonate. This direct spasmogenic effect of lithium may be responsible for the gastrointestinal side effects of lithium therapy.

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