Oral Potassium Supplements and Anticholinergic Drugs

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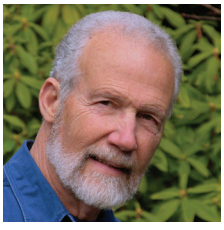

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MANY DRUG INTERACTION DATABASES include oral potassium supplements and drugs with anticholinergic activity as a serious interaction. The concern is that drugs with anticholinergic properties could slow gastrointestinal transit, causing potassium supplements to "stall" in the intestine, potentially leading to irritation or erosion of the lining of the intestine. This was initially noted with enteric coated potassium chloride (KCl) tablets, which were removed from the market in 1965.[1] This formulation of KCl was replaced by slow-release KCl tablets, originally with a wax-matrix formulation and later products using microencapsulated KCl.

Beginning in 1974, a series of papers was published describing cases of gastrointestinal lesions associated with slow-release KCl tablets. Between 1983 and 1998, several studies compared wax-matrix KCl with microencapsulated KCl products using endoscopy to evaluate the appearance of lesions after 1 to 2 weeks of KCl dosing.[2-7] In addition, these studies administered glycopyrrolate to simulate the effects of anticholinergic drugs on gastric motility. No independent measure of motility was used by any of the studies so the actual effect of the glycopyrrolate is unknown. The table summarizes studies that indicated the dose of KCl, the number of subjects without gastrointestinal lesions before KCl administration, and the number of subjects who developed erosions or ulcers while on KCl (TABLE).

Based on these limited data, lesions were seen more often during wax-matrix KCl compared with microencapsulated KCl formulation when administered with glycopyrrolate. Lesion occurrence with microencapsulated KCl was seen about as often as with placebo plus glycopyrrolate.

Interestingly, nearly all studies done with slow-release KCl products and anticholinergic products were done between 1983 and 1986. Additionally, we were unable to find reports of gastrointestinal lesions causing patient harm since the mid-1980s. The development of erosions or small ulcerations may not be symptomatic or result in gastrointestinal bleeding.

TABLE. WAX-MATRIX VS. MICRO ENCAP KCL

Formulation	Total Daily Potassium Dose (Reference)	No. of Subjects with Lesions/ No. of Subjects (%)
Wax-matrix	96 mmol[2,3]	10/21 (48%)
Micro Encap*	96 mmol	5/31 (13%)
Wax-matrix	<96 mmol[2-7]	44/108 (41%)
Micro Encap	<96 mmol	5/71 (7%)
Wax-matrix	<70 mmol[3,7]	26/54 (48%)
Micro Encap	<70 mmol	3/56 (5%)
Wax-matrix	< 60 mmol[3]	11/24 (46%)
Micro Encap	< 60 mmol	1/26 (4%)
Placebo	[2-5]	9/101 (9%)

*Micro Encap = Microencapsulated formulation

Moore reported that lesions caused by KCl healed over several weeks, regardless of KCl discontinuation or continuation.[8]

END NOTE

Based on data from many years ago, wax-matrix formulations of KCl would appear to be more likely to produce gastrointestinal lesions than other formulations when administered with glycopyrrolate. Microencapsulated KCl does not appear to increase the risk of patient harm compared with a placebo. No data are available comparing KCl formulations with other drugs having anticholinergic properties or in disease states associated with decreased gastrointestinal motility. The lack of contemporary reports of this interaction could indicate that the lesions observed under controlled studies are unlikely to result in clinically important adverse events. Nevertheless, there does not appear to be any compelling indication to use a wax-matrix formulation of KCl in patients with slow gastrointestinal motility. ◆