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In Vitro Total Potassium-Binding Capacity of Patiromer When Mixed with Apple or Cranberry Juice

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Topic and Problem: Patiromer, a sodium-free nonabsorbed potassium (K⁺)-binding polymer that exchanges calcium for K⁺, is approved for the treatment of hyperkalemia. Patiromer is supplied as a powder for oral suspension, and U.S. prescribing information recommends mixing patiromer (8.4 - 25.2 g QD) with 1/3 cup water (~80 mL). The compatibility of patiromer with apple and cranberry juices was investigated, as both are low in K⁺ compared to other juices (e.g., 200 mg and 35 mg per 240 mL, respectively, compared to 467 mg per 240 mL of tomato juice and 496 mg per 240 mL of orange juice).

Approach: The in vitro effects of mixing patiromer with apple and cranberry juices was assessed at two dilution ratios: 2.1 g patiromer suspended in 40 mL of juice (high dilution) and 6.3 g patiromer suspended in 20 mL of juice (low dilution), to evaluate a range of concentrations at clinically relevant patiromer doses. After suspension of patiromer in juice, samples were vortexed for 5 min before and after a 45-min waiting period; samples were then centrifuged for 5 min to separate the supernatant from the polymer. The polymer was then vacuum filtered, washed dried and analyzed for total K⁺ binding capacity (mEq/g). Samples were prepared in triplicate for both juices at each dilution. Results for each juice were averaged and compared with the total K⁺ binding capacity of patiromer when mixed with deionized water.

Results: The mean total K⁺ binding capacity (potency) of patiromer suspended in apple juice was 8.8 mEq/g at both high and low dilutions. For cranberry juice, the values were 8.8 and 8.6 mEq/g, respectively. The mean result for control (water) was 9.1 mEq/g. The differences are not considered clinically relevant. In conclusion, there was no adverse impact on in vitro total K⁺ binding capacity when patiromer was mixed with apple or cranberry juice.

Implications: These data support the administration of patiromer when mixed with apple or cranberry juice. Patiromer is a once-daily oral suspension for the treatment of hyperkalemia, a chronic medical condition that commonly affects patients with chronic kidney disease. Adherence may be a challenge for some patients. Providing alternatives to water for patients to mix patiromer may reduce the risk of nonadherence.

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