

NASA TECH BRIEF

Lyndon B. Johnson Space Center



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Potassium Food Supplement

A normal human diet includes about 100 milliequivalents (or 3.91 grams) of potassium daily. In cases of dietary deficiencies the potassium level may drop sharply, resulting in lethargy and muscular weakness. The most common method of supplementing potassium intake has been through potassium chloride. However, this compound has a noticeably unpleasant taste and in concentrated form leads to ulcerations of the small intestine.

To find a more suitable potassium source, several other potassium compounds were evaluated. These included the iodide, bromide, iodate, citrate, the tri- and di-basic phosphates, and the gluconate of potassium. Quantities of the compound necessary to get 10 to 30 milliequivalents (meq) of potassium were taste-tested with various foods.

The iodide, bromate, and iodate had objectionable flavors. Further, the iodate and bromate did not go into solution easily. Potassium gluconate, citrate, and dipotassium phosphate (the dibasic phosphate) received the highest taste ratings in food fortified with 10 and 15 meq of potassium.

The use of potassium citrate was questioned because in quantities greater than 2 grams it may act as a diuretic. A potassium intake level of 30 meq would require 2.86 grams of the citrate.

Less dipotassium phosphate than potassium gluconate is required per serving (0.87 vs. 2.35 grams) to obtain 10 meq of potassium. However, the dipotassium phosphate is somewhat more readily detected by taste than the gluconate.

The differences between the dibasic phosphate and the gluconate may be due to the pH. A 10 meq solution of the phosphate has a pH of 9.1 and the same concentration of the gluconate has a pH of 7.4. The gluconate consistently received the highest taste rating

and was indistinguishable from nonsupplemented samples in every food tested excepting pea soup.

The addition of 2.34 grams of gluconate to a serving provides 10 meq of potassium. No unfavorable side effects were found during use, and none are reported in the literature. The gluconate is a normal intermediary metabolite that is readily adsorbed and produces no evidence of gastrointestinal ulcerations at a dosage level of 80 meq per day.

Based on these findings potassium gluconate is considered the best supplementary source for potassium. The suggested usual dosage is 10 meq of potassium (2.34 grams gluconate), taken four times daily.

Notes:

1. Reference: Nutrition Today, Vol. 7, Sept.-Oct., 1972.
2. No additional documentation is available. Specific questions, however, may be directed to:
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NASA has decided not to apply for a patent.

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