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Simultaneous Determination of Endogenous and Orally Administered ^{15}N-Labeled Polyamines in Rat Organs

Yong Ji Xu（許　泳吉）, Takeshi Hara（原　健）, Keijiro Samejima（鮫島啓二郎）, Hitomi Sasaki（佐々木ひとみ）, Masaru Niitsu（新津勝）

Faculty of Pharmaceutical Sciences, Josai University, Sakado 350-0295, Japan

A method for the simultaneous determination of polyamines (putrescine, spermidine, and spermine) by ionspray ionization-mass spectrometry was modified to determine ^{15}N-labeled polyamines together with unlabeled polyamines using ^{13}C, ^{15}N double-labeled polyamines as internal standards. This technique permitted the use of ^{15}N-labeled polyamines as tracer compounds to follow polyamine biosynthesis, interconversion, and absorption. The method was used to examine the organ distribution of orally administered ^{15}N-labeled polyamines in rats. Each ^{15}N-labeled polyamine was taken up by the three organs tested: the small intestine, liver, and kidney. The uptake of ^{15}N-labeled spermidine was greater than that of ^{15}N-labeled spermine and putrescine. Administration of a mixture of ^{15}N-labeled polyamines was useful for determining the disposition of each ^{15}N-polyamine absorbed from the intestinal tract.