

twenty-four hour's was measured at one time without homogenization and this measurement was continued for one week in every volunteer. The mean value and standard deviation about their 56 samples were 0.39 ± 0.82 ml. (range: -0.72 – 2.19 ml.) by the well type counter and 0.38 ± 0.48 ml. (0.01 – 1.01 ml.) by the universal gamma counter. When one milliliter of ^{51}Cr labeled blood was measured by our method, the error was 19.4% of the exact value by the well type counter and 3.8% by the universal gamma counter. Therefore, without homogenization, 0.5 ml of blood in feces by the universal gamma counter and 2.0 ml by the well type counter were counted with

statistical counting accuracy of $\pm 10\%$.

Secondly, the results obtained by ^{51}Cr -method were compared with that of the ordinary chemical tests for occult blood in the feces. The positive cases examined by ^{51}Cr -method were all positive when they were examined by three kinds of the chemical tests. The appearance rate of positive reaction by chemical tests in the negative cases by ^{51}Cr -method was 16.8% by guaiac, 31.4% by pyramidon and 52.9% by orthtolidin method. It was proved by ^{51}Cr -method that the guaiac test, so called unsensible reaction, is the most reliable in three chemical tests for occult blood.

RI Production by IPCR (RIKEN) Cyclotron for Medical Use

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Methods for the preparation ^{18}F and ^{52}Fe are described. An oxygen gas stream is bombarded by 15 MeV ^3He for the production of ^{18}F mainly by the ^{16}O ($^3\text{He}^{++}$, p) ^{18}F reaction. The ^{18}F formed is absorbed from the stream by quartz wool thinly covered with NaOH. The absorption efficiency is 60 to 80% at present. Quartz wool without treatment or covered with Na_2CO_3 or NaCl caught the ^{18}F with a poorer efficiency. Usually, about 1 mCi for 5 minits bombardment of ^{18}F is thus obtained.

Natural chromium electroplated on a copper block is bombarded by ^3He above 40 MeV for the production of ^{52}Fe mainly by the ^{52}Cr ($^3\text{He}^{++}$, 3n) ^{52}Fe reaction. The bombarded

target is transferred to a remote-operation cell and dissolved in HCl. The ^{52}Fe is extracted by isopropyl ether or methylisobutyl ketone and then back-extracted into water. It takes about an hour for the chemical process and the practical yield of the separated ^{52}Fe is about 1 mCi for one hour bombardment.

Procedures for the production of ^{67}Ga , ^{111}In and ^{28}Mg are now being developed. Nuclear reaction and incident particle are following;

^{67}Zn (d, 2n) ^{67}Ga with deuteron above 20 MeV
 ^{109}Ag (α , 2n) ^{111}In with α -particle 40 MeV
 ^{27}Al (t, 2p) ^{28}Mg with triton 25 MeV

IPCR cyclotron is the first cyclotron accelerating triton in the world.