

Preparation of ^{14}C labeled β -aminoisobutyric acid (3 Amino-2 methyl-propionic acid, 3^{14}C) *

In the course of studies on the catabolism of thymidine the need emerged to study in greater detail its metabolite ⁽¹⁾, β aminoisobutyric acid (BAIBA). This substance, labeled with ^{14}C in the 3-C position, was synthesized by the following procedure, which represents a modification of the synthesis of inactive BAIBA ⁽²⁾ :

1. — *Synthesis of ethyl α cyanopropionate.*

1.2 mg of ^{14}C -potassium cyanide (1 mC)¹ with 6 mg inactive KCN (together 0.12 mM) was dissolved in a mixture of 25 mg (0.16 mM) ethyl α bromopropionate² and 2 ml absolute ethanol. The solution, sealed in a glass tube, was heated to 100° C overnight. After addition of 10 ml ethyl ether, the solution was extracted twice with 3 ml water, in order to remove inorganic material, and concentrated to a small volume.

2. — *Synthesis of BAIBA.*

The α cyanopropionate solution obtained by the previous step was used without further purification. To this solution 2 ml of acetic acid was added and the mixture was hydrogenated in presence of platinum oxide catalyst at room temperature and at atmospheric pressure for three hours. The H_2 uptake was 2.4 ml i.e. 45 % of the amount of potassium cyanide added.

An equal volume of conc. HCl was then added and the ester hydrolyzed by boiling under reflux for 6 hours.

The impure product, containing 35 % of the radioactivity added, was purified by descending paper chromatography on large sheets of Whatman No 3MM paper in the following solvent system ⁽³⁾ : butylacetate, acetic acid, ethanol, water 3:2:1:1. The spot containing BAIBA was eluted with water and the material rechromatographed in ethylacetate, formic acid, water 70:10:15.

* Received on 20 August 1965.

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² This substance was prepared and purified for us by Dr. W. MÜLLER, Euratom, Gent.

After elution, the material ran as a single ninhydrine positive spot superimposable with authentic BAIBA in the three Fink solvent systems ⁽⁴⁾. The yield of the purified material in relation to the KCN added was 28 %.

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