CHERNOBYL-DERIVED RADIOCESIUM IN SOME PHARMACEUTICAL PLANTS

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The cesium radioactivity (owing to $^{134}$Cs and $^{137}$Cs) in a number of wild plants of pharmaceutical interest harvested in Transylvania was followed during the 1986-1994 period. The data give information on major pathways of vegetable organism contamination through lives from fallout and resuspension and by root uptake from contaminated soil.

INTRODUCTION

During the Chernobyl accident (1986) many products of activation and fission were ejected into the atmosphere. Between these products the radionuclides $^{134}$Cs and $^{137}$Cs were present, the last being more important due to its longer half-life.

The realization of some mathematical models for the transfer of contaminated nuclides in nature is the con-
tinuous aim of specialists in radioprotection. It is well known that the radionuclides ejected (present in the atmosphere as aerosols or fallouts) are taken up by plants, the main contamination being in the leaves and roots.

As a more important mechanism of contamination for the human body is the ingestion of contaminated food, beverages or drugs, in order to assess the additional internal irradiation, the content of radionuclides in plants of pharmaceutical interest have to be known.

EXPERIMENTAL

With a measuring equipment using a 80x80 mm$^2$ NaI(Tl) crystal connected to a single-channel analyzer with an energy window between 565 and 730 keV, both $^{134}$Cs and $^{137}$Cs were determined simultaneously.

The samples of dry plants were pressed in a Marinelli beaker of 750 cm$^3$ volume. With a global efficiency of 4.3% the minimum detectable activity of 2 Bq was obtained for a background of 2 cps and a measuring time of 100 min.

RESULTS AND DISCUSSION

Some of the most important pharmaceutical plants from Transylvania measured during the 1986-1994 period are shown in Table 1 and their maximum values of radiocesium content are given in Table 2.

The evolution of this radioactivity for some of the samples are better illustrated by the histograms given in Figs 1-4.