Abstract

ABSTRACT

This research was conducted to study the efficacy of gamma irradiation at doses of 5 and 10kGy on microbial and medicinal quality of Ashwagandha and Kalmegh upto 12 months of storage.

Roots of Ashwagandha and whole plant of Kalmegh were collected, authenticated and gamma irradiated in a Cobalt 60 irradiator. The applied dose levels were 5 and 10kGy and this absorbed dose was monitored with ceric/cerous dosimeters. All samples were stored at room temperature and analysed at 0, 6 and 12 months of storage.

Non-irradiated and gamma irradiated samples were analyzed for their pharmacognostical, physicochemical, phytochemical, pharmacological, toxicological and microbiological parameters.

There were no significant changes during pharmacognostical, physicochemical and phytochemical analysis of non-irradiated and gamma irradiated (at doses of 5kGy and 10kGy) samples of both Ashwagandha and Kalmegh which ensures that there are no chemical changes in irradiated samples even upto twelve months of storage. Results of Acute oral toxicity studies showed that the samples were found to be safe at the irradiated dose upto 12 months after irradiation. Further significant pharmacological activity was present in non-irradiated and gamma irradiated samples of both plants, which confirms that gamma irradiation at doses of 5kGy and 10kGy is not interfering with biomolecules present in both the plants.

Results of total aerobic count and total fungal count indicate that both plants are highly contaminated. On testing for specific pathogens, both Ashwagandha and Kalmegh were positive for presence of E.coli and Staphylococcus. Values exceeded drastically on storing it upto 12 months.
Abstract

Samples irradiated at 5kGy and 10kGy had significantly lower levels of microbes than the non-irradiated samples even at 12th month study. 5kGy could significantly lower the microbes to acceptable levels, however complete sterility could be attained at a dose of 10kGy in both Ashwagandha and Kalmegh. Thus, gamma irradiation at a dose of 5kGy and 10kGy can be chosen as a suitable technique for microbial decontamination of Ashwagandha and Kalmegh.

Key words: Microbial contamination, gamma irradiation, Ashwagandha, Kalmegh, shelf-life.