

## The effect of gamma radiation on microbial content and curcuminoids of curcuma amada roxb. rhizomes / D.P. Rahayu, F.C. Saputri, D. Darwis

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### Abstrak

The microbial contamination in the rhizomes of medicinal plants including *Curcuma amada* rhizomes is generally high. This due to the fact that rhizomes are the bottom parts that grow in the soil. Based on the Regulation of Head of the Indonesian National Agency of Drug and Food Control Number HK.00.06.1.52.4011, the limits of microbial contamination in herbal/medicinal plants are  $10^6$  cfu/g for the total microbial and  $2 \times 10^4$  cfu/g for the total yeast and mold. Gamma irradiation is one of the methods to reduce microbial contamination in medicinal plants. In this research, the effectiveness of gamma irradiation in microbial reduction and its effects to curcuminoid contents was determined by irradiating *Curcuma amada* rhizomes at doses of 5 and 10 kGy. The initial contamination in this rhizome was  $8.78 \times 10^7$  cfu/g and  $5 \times 10^1$  cfu/g for the total microbial and for the total yeast and mould, respectively. The result indicates that at 5 kGy, the microbial contamination and the mould and yeast contamination were reduced from  $8.78 \times 10^7$  cfu/g and  $5 \times 10^1$  cfu/g to  $1.39 \times 10^4$  cfu/g and under  $1 \times 10^1$  cfu/g, respectively. Meanwhile the comparison of curcuminoids between the irradiated and non irradiated samples was performed by HPLC method and was found to actually increase from 0.26% to 0.36% after the 5-kGy irradiation. It can be concluded that an irradiation dose of 5 kGy is effective to reduce the content of microorganisms without lowering curcuminoids. Gamma radiation could be used as decontamination method in medicinal plants.