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EDITORIAL

Dear reader, with great pleasure we provide you with the third issue of Atom Indonesia in 2018, namely Volume 44, No.2 (2018). In this issue, we proudly announce a piece of very good news that Atom Indonesia has been indexed by Scopus, so it becomes one of the international journals recognized worldwide. Atom Indonesia has also been indexed by Google Scholar, DOAJ, Crossref, ISJD, and IAEA INIS. Atom Indonesia has provided a Digital Object Identifier (DOI) for each article accepted, so that it can be linked to Crossref. By this indexing, it is expected that Atom Indonesia will become better known among the researchers from around the world and easier to access, thus also increase the impact factor of the journal.

Another important news is that Atom Indonesia has been reaccredited with the highest rank (A) category by the Ministry of Research, Technology and Higher Education (RISTEKDIKTI), and also by the Indonesian Institute of Science (LIPI) with the numbers of 36b/E/KPT/2016 and 767/AU3/P2MI-LIPI/08/2017, respectively. Additionally, the certificate as an international journal was awarded by the Indonesian Institute of Science (LIPI) starting June 2017 until August 2022. Further information on, and the full articles of, Atom Indonesia Vol.44 No.2 (2018) can be downloaded from http://aij.batan.go.id.

We are glad to inform you that, starting this year, the number of articles per issue has been increased from the previous seven to eight. The Atom Indonesia Vol. 44 No.2 (2018) contains eight articles discussing various applications of nuclear science and technology, ranging from the fungal population and aflatoxin contamination on stored gamma-irradiated nutmeg (*Myristica fragrans*) kernels; the present status of marine radioecology in Jakarta Bay; the effect of calcium carbonate and cholecalciferol on pharmacokinetic interaction of ^{99m}Tc-CTMP radiopharmaceuticals for bone scanning in rats (*Rattus norvegicus*); amino acid metabolism in the muscle of sheep fed with Mitchell grass hay supplemented with *Gliricidia sepium*; a novel method for ^{57}Ni and ^{57}Co production using cyclotron-generated secondary neutrons; experimental determination of the dosimetric characteristics of BATAN's ^{125}I source for brachytherapy; and polymorphism of XRCC1 gene exon 6 (*Arg194Trp*) in relation to micronucleus frequencies in hospital radiation workers.

"The Fungal Population and Aflatoxin Contamination on Stored Gamma-irradiated Nutmeg (*Myristica fragrans*) Kernels" was explored by K. Nurtjahja and O.S. Dharmaputra from the Department of Biology, Bogor Agricultural University, Bogor, Indonesia, under collaboration with W.P. Rahayu from SEAMEO BIOTROP, Bogor, Indonesia, and R. Syarief from SEAFAST Center, Bogor Agricultural University, Bogor, Indonesia. A study on the effectiveness of gamma irradiation at doses of 5 and 10 kGy on fungal population, *Aspergillus flavus* strains, and aflatoxin B_1 contamination on stored nutmeg kernels was conducted. The kernels were collected from seeds in a period of one week from the ground at North Sulawesi Province. Results showed that fungal population was reduced with the increasing irradiation dose. Five species of fungi were isolated, *i.e.*, *Aspergillus flavus*, *A. niger*, *Cladosporium cladosporioides*, *Eurotium chevalieri*, and *Penicillium citrinum*.

"The Present Status of Marine Radioecology in Jakarta Bay" was written by H. Suseno and M.N. Yahya from the Center for Radiation Safety Technology and Metrology, National Nuclear Energy Agency, South Jakarta, Indonesia, under collaboration with Budiawan from the Department of Chemistry, Faculty of Mathematics and Natural Sciences, University of Indonesia, and Muslim from the Department of Oceanography, Diponegoro University, Semarang, Indonesia. The operation of nuclear facilities such as the research reactor and its supporting installation in Serpong Nuclear Area may involve controlled release of radionuclides to Cisadane River whose flow would then carry them to Jakarta Bay. There are limited marine radioecology studies or radionuclides monitoring at Jakarta Bay. Therefore, monitoring of $^{239/240}$Pu and ^{137}Cs was carried out from Tanjung Pasir to Tanjung Kerawang.

"The Effect of Calcium Carbonate and Cholecalciferol on Pharmacokinetic Interaction of ^{99m}Tc-CTMP Radiopharmaceuticals for Bone Scanning in Rats (*Rattus norvegicus*)" was explored by I. Mahendra, I. Daruwati, T.H. Ambarwibawa, and W. Nuraeni from the Center for Applied Nuclear Science and Technology, National Nuclear Energy Agency, Bandung, Indonesia. Hypocalcemia is one of manifestation of bone metastases which could be treated using calcium carbonate and cholecalciferol. Tc-99^{m} radiolabeled 1,4,8,11-tetraazacyclo tetradecyl-1,4,8,11-tetramethylene phosphonic acid (against ^{99m}Tc-CTMP), on the other hand, is a radioactive complex compound which has an affinity toward bone. Therefore, it could be used as bone tracer (radiopharmaceutical) in bone imaging.

"Amino Acids Metabolism in the Muscle of Sheep fed with Mitchell Grass Hay Supplemented with *Gliricidia sepium*" was written by Y. Widiawati and M. Winugroho from the Indonesian Research Institute for Animal Production (IRIAP), Bogor, Indonesia under collaborations with E. Teleni from the Veterinary Science Department, James Cook University, Townsville, Australia. Leaves of *Gliricidia sepium* have a high content of amino acid that is required for protein synthesis in the muscle. Supplementation of the legume leaves to low quality basal diet would improves amino acids amount to obtain an optimum growth of animal. The aim of experiment was to investigate the effect of *Gliricidia sepium* leaves supplementation to low quality basal diet on protein synthesis in muscle of animal.

"A Novel Method for ^{57}Ni and ^{57}Co Production using Cyclotron-Generated Secondary Neutrons" was explored by H. Suryanto and I. Kambali from the Center for Radioisotope and Radiopharmaceutical Technology, National Nuclear Energy Agency, South Tangerang, Indonesia. ^{57}Ni and ^{57}Co radioisotopes are used in the synthesis of radiopharmaceuticals, for research purposes, as well as radiotherapy in nuclear medicine due to its decay characteristics. In this research, ^{57}Ni and ^{57}Co were produced using secondary neutrons.

"Dynamic Analysis on the Safety Criteria of the Conceptual Core Design in MTR-type Research Reactor was written by T. Surbakti, S. Pinem, and L. Suparlina from the Center for Nuclear Reactor Technology and Safety, National Nuclear Energy Agency, South Tangerang, Indonesia. One of the high-priority research activities in BATAN is designing a new MTR-type research reactor with a new fuel. The core follows a compact core model that consists of sixteen fuel and four control rods. The increasing heat flux at the fuel will cause the temperature of the fuel and cladding to increase; therefore, the coolant flow rate needs to be increased. However, the coolant flow rate in the fuel element is limited by the thermal-hydraulic stability in the core. Therefore, dynamic analysis is important in evaluating the design and operation of nuclear reactor safety.

"Determination of the Dosimetric Characteristics of BATAN's ^{125}I Source for Brachytherapy: An Experimental Study" was written by K.Y.P. Sandy from the Center for Technology of Radiation Safety and Metrology, National Nuclear Energy Agency, South Jakarta, Indonesia, in collaboration with S.A. Pawiro and D.S. Soejoko from the Department of Physics, Faculty of Mathematics and Natural Sciences, University of Indonesia, Depok, Indonesia. Iodine-125 brachytherapy sources with low photon energies have been widely used in treating tumors. According to American Association of Physicists in Medicine Task Group No. 43 (AAPM TG-43) recommendations, the dosimetric characteristics of the new brachytherapy sources should be determined before clinical use. In this study, the dosimetric characteristics of ^{125}I manufactured by BATAN were determined through measurement by using thermoluminescent dosimeter (TLD) and gafchromic XR- QA2 film.

"Polymorphism of XRCC1 Gene Exon 6 (Arg194Trp) in Relation to Micronucleus Frequencies in Hospital Radiation Workers" was explored by H.N.E. Surniyantoro, Y. Lusiyanti, T. Rahardjo, D. Tetriana, and S. Nurhayati from the Center for Radiation Safety Technology and Metrology, National Nuclear Energy Agency, South Jakarta, Indonesia, under collaboration with H. Date from Faculty of Health Sciences, Hokkaido University, Sapporo, Japan. The genetic polymorphism of deoxyribonucleic acid (DNA) repair genes plays important roles in regulating individual sensitivity to ionizing radiation, maintaining DNA integrity, and preventing cancer and DNA damage. X-ray repair cross- complementary group 1 (XRCC1) as

one of the members of base excision repair (BER) is involved in the repairement of oxidized bases and single-strand breaks DNA after exposure by reactive oxygen species (ROS), including ionizing radiation. This study aimed to examine the correlation between XRCC1 exon 6 gene polymorphism and micronucleus (MN) frequency in radiation workers and their relation to age, gender, smoking status and years of exposure.

On behalf of Atom Indonesia, I would like to thank for all of your contributions and endless support that have allowed Atom Indonesia to reach an outstanding performance for all the years. This outstanding achievement could not have been reached without great efforts and cooperation from the editors, reviewers, management personnel, authors, and readers.

Editor in Chief