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OPTIMIZATION OF LABELING α,γ-MANGOSTEEN ISOLATED FROM MANGOSTEEN CORTEX FRUCTUS (Garcinia Mangostana L) WITH RADIONUCLIDE TECHNETIUM-99m FOR CANCER DETECTION

There are no complaints and symptoms in the early-stage of cancer which causes the patient is not aware of the presence cancer in their body. The spread of cancer cells could be prevented if known earlier. One of the early methods of cancer detection which is being developed currently is technique of nuclear medicine using radiopharmaceutical. A Radiopharmaceutical has two components: a radionuclide and a pharmaceutical. Technetium-99m has a half-life 6 hours and a pure gamma-ray transmitter (140 KeV) for diagnosis. Mangosteen is an isolated from the pericarp of Garcinia mangostana L which is widely developed anticancer activity. α-mangosteen, and γ-mangosteen compounds has anti cancer effects with cancer cell proliferation disorders, so α, γ-Mangosteen is expected to be a carrier that will binding technetium-99m to cancer cells. This study has aimed to determine optimal labeling conditions α, γ-mangosteen with technetium-99m radionuclides. Determination of pH conditions, the number of reducers, the number of ligands used and the variation of incubation time is essential to produce optimal labelled. Labelled α, γ-mangosteen with technetium-99m with directed method. The result showed the optimum condition for 99mTc-mangosteen, were 500 µg mangosteen, 20 µg SnCl2.2H2O, 20 µL tween 80 (0,1%), pH 8 and 5 minutes incubation time at room temperature. 99mTc-mangosteen has a radiochemical purity 99.41 ± 0.04% with stability for 3 hours which has fulfilled the requirements (more than 90%). Based on the results of 99mTc-mangosteen compounds above are expected to be used for early detection of cancer.

Keywords : Cancer diagnosis, α, γ-mangosteen, Technetium-99m, Radiopharmaceutical, 99mTc- mangosteen.

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