Evaluation of Gastric Cancer Stem Cell Targeting Ability of Saponin Extract and Preparation of Tea Product from Ardisia gigantifolia Stapf. Leaves

Dao, Minh (School: Thai Nguyen Specialized High School)
Nguyen, Cuong (School: Thai Nguyen Specialized High School)

In Vietnam, Ardisia gigantifolia is used as the best medicine to treat and prevent some gastric diseases. Ardisia gigantifolia contains saponin that can inhibit the growth of multiple cancer cells. With the desire to eliminate cancer stem cells in gastric tumors we first isolated the saponin-containing fraction from Ardisia gigantifolia leaves. Then, we evaluated the effect of this fragment on AGS cancer cells. To evaluate the cancer stem cells targeting ability of the saponin fragment, we analyzed the effect of this fragmenet on ALDH and CD24 marker expression, which are specific markers of gastric cancer stem cells, related to many important properties of cancer stem cells. It was found that the fraction containing saponin significantly reduced the number of cancer stem cells expressed ALDH and CD24 markers. To evaluate the tumor suppressing ability of saponin fragment, tumorspheres were cultured in 3D medium with and without saponin extract. The result showed that the saponin extract was able to inhibit growth and destroy cells in 3D tumorspheres over time. Furthermore, to understand the molecular mechanism of the reduction in the number of cancer stem cells, we analyzed the effect of saponin extract on several cancer stem cell-regulated genes. As a result, the saponin extract reduced the expression of key genes involved in stem cell properties including Nanog, Sox2 and Klf4. Based on the collected data and results, we have produced tea bags from Ardisia gigantifolia for assistance in gastric cancer treatment.

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