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Studying the Anti-Cancer Effects of Thymoquinone on Tumor Cells Through Natural Killer Cells Activity

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Abstract : Nigella sativa which is known as dark cumin is a well-known example for a widely applicable herbal medicine. Nigella sativa can be effective in a variety of diseases such as hypertension, diabetes, bronchitis, gastrointestinal upset, and cancer. The anticancer effect of Nigella sativa appeared to be mediated by immune-modulatory effect through stimulating human natural killer (NK) cells. This is a type of lymphocytes which is part of the innate immunity, also known as the first line of defense in the body against pathogens. This study investigated the effect of thymoquinone as a major component of Nigella sativa on the molecular cytotoxic pathway of NK cell and the role of thymoquinone therapeutic effect on NK cells. NK cells were cultured with breast tumor cells in different ways and cultured media was collected and the concentration of perforin, granzyme B and interferon-α were measured by ELISA. The cytotoxic effect of NK cells on breast tumor cells was enhanced in the presence of thymoquinone, with increased activity of perforin in NK cells. This improved anticancer effect of thymoquinone on breast cancer cells.

Keywords : breast cancer, cancer cells, natural killer cells, thymoquinone
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