The relations between stress and non-hormonal cancers have been epidemiologically specified for many years, but there is an ambiguity considering etiological terms. Chronic stress is felt both directly and indirectly involved in the development of this disease. In the first case, chronic stress directly increases the inflammatory substances that cause the fracture of chromosomes chains and can be involved in the development of cancer. In the second case, there is an indirect and inverse relationship between increasing levels of chronic stress and the strength of the immune system. Chronic stress indirectly causes a decline in the influence of immune system by unknown reasons in two ways and it provides a platform for the development of disease: (1) It causes reduced cognitive lymphocytes and reduced discernment to distinguish between normal cells and cancer decreases; may be this could explain reason for the creation of a variety of immune disorders in patients with chronic stress; and (2) Reduced power of the immune system caused by chronic stress leads to the increased speed of the shortening of telomeres, which subsequently provides the platform for the breaking of the chromosomes. What is noteworthy is that whether the reduced power of immune system resulted from the increase in inflammation in the blood of the depressed people is due to the increased plasma levels of cortisol or it is eventually caused by other unknown reasons.

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Innovative approaches in metabolomics for understanding drug resistance in breast cancer

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Breast cancer is one of the leading causes of death worldwide. In Pakistan, prevalence of this ailment is highest amongst all types of cancer i.e., 38.5%. Among various treatments available to overcome cancer, chemotherapy is the one used most widely. Most often a combination of two or more medicines will be used as chemotherapy treatment for breast cancer. But in chemotherapy, major clinical setback is drug resistance. Metabolomics is an emerging field that utilizes information of cellular biochemistry for the early detection, diagnosis and establishment of predictive biomarkers of breast cancer. Currently, metabolics is used to evaluate a much comprehensive picture of tumor development and growth. This review highlights potential metabolomics applications towards developing a more personalized and tailored chemotherapy treatment. The methodology is based on inclusion exclusion criteria. Literature survey and questionnaire were included, while clinical trials were excluded. This report provides a review of 12 articles out which few were excluded. The objective was to explore: (1) Early breast cancer detection, (2) Increasing life expectancy of cancer patients, (3) Mechanisms for breast cancer drug resistance, (4) Chemotherapy in breast cancer and its success rate and (5) Side effects of chemotherapy in breast cancer. According to the survey, the average response rate of a cancer drug is the lowest at 21%, suggesting that 79% of patients with cancer are overdosed, while, according to an international study, 40-50% of breast tumors will display acquired resistance. When specific therapies are chosen on the basis of a patient’s metabolomics profile, it will give rise to customized medicine and personalized tailored treatment. Using high throughput information using metabolomics to clinical diagnosis and treatment can help accelerate the patient safety, quality of life and survival rate by identifying pathways involved in drug resistance. Metabolomics is future of anti-cancer pharmacology; following the right drug for the right patient at the right time can offer safety, quality and effectiveness of anti-cancer treatment.

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