**Breast cancer treatment using natural drug with potential drug named BERBERINE**

Agrin mansouri1\* , seyed morteza Javadirad 2

1 BS student of cell biology, Department of Cell and Molecular Biology and Microbiology, Faculty of Biological Science and technology, University of Isfahan, Isfahan, Iran

2 Assistant professor of molecular genetics, Department of Cell and Molecular Biology and Microbiology, Faculty of Biological Science and technology, University of Isfahan, Isfahan, Iran

corresponding author Email: agrin.msor@gmail.com

**‌ Statement of Problem:** There are many methods for treating breast cancer, but the approach of treating this cancer using natural drugs is affordable and has less risk for patients and environment.

**Research Purpose:** Among different cancers, the treatment of breast cancer has been considered due to its high prevalence and mortality

**Description of the problem:** The plant alkaloid berberine has potential therapeutic applications for breast cancer, although a better understanding of the genes and cellular pathways regulated by this compound is needed to define its mechanism of action in cancer treatment.

**Results and Conclusion:** Berberine has antioxidant properties and plays a protective role in preventing oxidative damage to cellulose. Also, a relationship between berberine and apoptosis has been found suggesting that berberine induces apoptosis by increasing the level of reactive oxygen species and some signaling pathways related to reactive oxygen species such as JNK/P38 MAPK, calcium, and apoptosis. Berberine also reduces the expression epidermal growth factor receptor and another signaling pathway under the influence of berberine is closely related to cell adhesion. Oral administration of berberine can inhibit the G1 phase of cell cycle in cancer cells by increasing p53 levels. Berberine can also suppress the activation of the Wnt/β-catenin signaling pathway while increasing its amount.

**Keywords:** breast cancer, Berberine, natural-product