

**Multiple heat shock protein complex (MHSPC) induced by repetitive heat shocks enhance drug resistance in MCF-7 breast cancer cell line.**

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**Aims.** Heat shock proteins are produced in animal cells due to a variety of stressful conditions such as heat shock (HS) to enhance their survival. The aim of the study was to evaluate the role of heat shock proteins (Hsp) produced during HS treatment in sensitizing cells towards anticancer drugs. **Materials and Methods.** MCF-7 cells were exposed to repetitive HSs in a water bath for 1 hour. Cells were lysed and lysates were separated into two for treatment with 0.5M KCl. Immuno-slot blot technique was used to study the production of different Hsp involved in the MHSPC using specific antibodies for each Hsp with the ECL detection method. The effect of herbimycin-a on the efflux pump proteins was assayed using the calcein fluorescence detection method. **Results.** The results showed a decreased production of all Hsp tested with repetitive heat shocks on the lysates not treated with 0.5M KCl and increase in the other treated lysates. The efflux pump proteins increased in production with repetitive HS treatments. Herbimycin-a however managed to inhibit the formation of the MHSPC resulting in the decreased production of efflux pump proteins. **Conclusions.** Repetitive HS of MCF-7 breast cancer cells render them drug resistant. That is via the induction of MHSPC, which in turn activates the HSE of the *mdr-1* gene. These results together suggest that, the MHSPC formation in MCF-7 cells during repetitive HS treatments facilitated the activity of efflux proteins, by increasing the expression of heat shock elements on the *mdr-1* gene promoter. The results with herbimycin-a will render MCF-7 cells sensitized towards anticancer drugs, since the efflux of drugs will be diminished.