Modulatory effects of curcumin on heat shock proteins in cancer: A promising therapeutic approach

Forouzanfar F.

Barreto G.

Majeed M.

Sahebkar A.

Cancer metastasis represents a multistep process, including alteration of cell adhesion/motility in the microenvironment and sustained angiogenesis, which is essential for supporting cancer growth in tissues that are distant from the primary tumor. There is growing evidence suggesting that heat shock proteins (HSPs) (also known as heat stress proteins), which constitute a family of stress-inducible proteins, may be involved in the pathogenesis of cancer. Curcumin (diferuloylmethane) is a potent anti-inflammatory, antioxidant, antimicrobial, and antitumor agent. Curcumin has been shown to regulate different members of HSPs including HSP27, HSP40, HSP60, HSP70, and HSP90 in cancer. Here, we present extent findings suggesting that curcumin may act as a potential therapeutic agent for the treatment of cancer through its regulation of HSPs.

cancer

curcumin

heat shock protein

herbal medicine

chaperonin 60

curcumin

heat shock protein

heat shock protein 27

heat shock protein 40

antineoplastic agent

chaperone

chaperonin 60

curcumin

DNAJB1 protein, human

heat shock protein

heat shock protein 40

heat shock protein 70

heat shock protein 90

HSPB1 protein, human

HSPD1 protein, human

mitochondrial protein

tumor protein

herbal medicine

human

malignant neoplasm

nonhuman

priority journal

protein expression

Review

drug effect

gene expression regulation

genetics

lymph node metastasis

metabolism

neoplasm

neovascularization (pathology)

pathology

signal transduction

tumor microenvironment

Antineoplastic Agents, Phytogenic

Chaperonin 60

Curcumin

Gene Expression Regulation, Neoplastic

Heat-Shock Proteins

HSP40 Heat-Shock Proteins

HSP70 Heat-Shock Proteins

HSP90 Heat-Shock Proteins

Humans

Lymphatic Metastasis

Mitochondrial Proteins

Molecular Chaperones

Neoplasm Proteins

Neoplasms

Neovascularization, Pathologic

Signal Transduction

Tumor Microenvironment