HCG (human chorionic gonadotropin) References


There are “48 genes that are affected by this hormone.”


“....prolonged overexpression of HCG in adults, particularly in women, has been linked to the development of tumors e.g. gestational trophoblastic diseases, choriocarcinoma/germ cell tumors, osteosarcoma, bladder cancer, and prostate cancer.”


“In case of malignant tumors as auto-antibody concentration is low and HCG level is high, HCG plays a role of autocrine growth factor for tumor cells and maintains the malignancy and tumor growth. The existence of auto-antibody indicates that the immune system is not completely tolerant to HCG”


**PHI (phosphohexose isomerase) References**


   “Several investigators have reported that serum PHI is often elevated in cancer of the gastrointestinal tract (G.I.) head, neck and esophagus, lung and breast; and many years ago Bodansky and others considered the PHI levels to be the best “index” of malignancy in cancer patients”


   “This is the first report of the paracrine and mitogenic actions of AMF and the results presented here show that AMF functions as a growth factor and suggest a possible role for its activity in normal tissue regeneration and tumor cell dissemination”

5. Watanabe, H, et al. Tumor cell AMF is the neuroleukin/phosphohexose isomerase polypeptide. Am Assoc Cancer Res J; 1996  [http://cancerres.aacrjournals.org/content/56/13/2960]
“The structure of the autocrine motility factor (AMF), a tumor secreted cytokine which stimulates cell migration in vitro and metastasis in vivo, is unknown. The studies demonstrate that AMF is the previously cloned cytokine and enzyme designated as neuroleukin, and phosphohexose isomerase (PHI), which has been independently implicated in cell motility, and to be a cancer progression marker. Specific PHI inhibitors (carbohydrate phosphates) inhibited enzymatic activity and AMF-induced cell motility.”


“Study showed that estimation of serum PHI levels have significant role in diagnosis of cancer, early detection of residual growth, recurrent growth and secondaries”


“The incidence of distant metastases is higher in the tumors with low oxygen pressure than in those with high oxygen pressure”


“We conclude that the presence of higher AMF-R gene expression and tumor cell motility via receptor in response to the stimulation of AMF could be an important aspect in the invasion and metastasis of lung cancer cell lines”


“AMF/PGI is a ubiquitous cytosolic enzyme and is produced as a leaderless secretory protein, released from cells via a non-classical pathway. Increased expression of AMF/PGI and its receptor/CXXC-R has been found in a wide spectrum of malignancies, and is associated with cancer progression and metastasis. Ectopic overexpression of AMF/PGI results in its secretion and activation via a constitutive autocrine activation loop that renders the cells highly motile, acquiring a transformed phenotype in vitro and tumorigenicity in vivo.”


“The enzyme is a regulatory catalyst of anaerobic Embden-Meyerhof glycolitic and glucogenetic pathways by reversibly converting G-6-P to F-6-P. It is the human AMF. As such, it stimulates cell motility in an autocrine manner and closely related to malignancy. It is a cytokine of the neurokine family”


“AMF and AMFR are overexpressed in human breast cancer and are negatively associated with patients’ clinical outcome. This strongly indicates that the AMF–AMFR complex plays an important role in the progression of breast cancer, as well as having a prognostic role”

“AMF was detected in a major proportion of lung carcinomas, and may play a part not only in proliferation and/or progression of the tumors, but also, possibly, in the differentiation of SCLC. Furthermore, higher mRNA expression may be related to the high metastatic potential in NSCLC.”

“AMF promoted cell motility in autocrine pathways, but was later shown to have a function as a mitogen.”


“AMF is a multifunctional protein capable of affecting cell migration, invasion, proliferation, and survival, and possesses phosphoglucose isomerase activity and can catalyze the step in glycolysis and gluconeogenesis”


“Elevated plasma levels may lead to metastatic events: cytokinetic vibration and dislodgement of the cancerous cell from its neighboring environment and consequent embolism via lymph or blood flow to distant sites”


<table>
<thead>
<tr>
<th>New Search</th>
<th>Help</th>
<th>More About 21CFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Code of Federal Regulations] [Title 21, Volume 8] [Revised as of April 1, 2013] [CITE: 21CFR862.1570]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TITLE 21--FOOD AND DRUGS
CHAPTER I--FOOD AND DRUG ADMINISTRATION
DEPARTMENT OF HEALTH AND HUMAN SERVICES
SUBCHAPTER H--MEDICAL DEVICES

PART 862 -- CLINICAL CHEMISTRY AND CLINICAL TOXICOLOGY DEVICES

Subpart B--Clinical Chemistry Test Systems

Sec. 862.1570 Phosphohexose isomerase test system.

(a) Identification. A phosphohexose isomerase test system is a device intended to measure the activity of the enzyme phosphohexose isomerase in serum. Measurements of phosphohexose isomerase are used
in the diagnosis and treatment of muscle diseases such as muscular dystrophy, liver diseases such as hepatitis or cirrhosis, and metastatic carcinoma.

(a) Human chorionic gonadotropin (HCG) test system intended for the early detection of pregnancy --
(1) Identification. A human chorionic gonadotropin (HCG) test system is a device intended for the early detection of pregnancy is intended to measure HCG, a placental hormone, in plasma or urine.

(b) Classification. Class II.

(b) Human chorionic gonadotropin (HCG) test system intended for any uses other than early detection of pregnancy --
(1) Identification. A human chorionic gonadotropin (HCG) test system is a device intended for any uses other than early detection of pregnancy (such as an aid in the diagnosis, prognosis, and management of treatment of persons with certain tumors or carcinomas) is intended to measure HCG, a placental hormone, in plasma or urine.

(2) Classification. Class III.

(3) Date PMA or notice of completion of a PDP is required. As of the enactment date of the amendments, May 28, 1976, an approval under section 515 of the act is required before the device described in paragraph (b)(1) may be commercially distributed. See 862.3.