

Illicit use of hCG in dietary programs and to promote anabolism

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The most common therapeutic use of hCG is not to promote ovulation or to promote progesterone production and maintain pregnancy. It is the illicit use of hCG in dietary programs which we first reviewed in 2016 [1]. There are currently thousands of websites, books, newspaper advertisements, and TV advertisements selling diets with these ridiculous claims. Some athletes even give themselves regular shots of hCG to promote testosterone and anabolism for muscle and bone growth. These uses inspire us to ask, why? This chapter discusses the pros and cons of illicit hCG uses and misuses of hCG administration. Finally, this chapter considers the dangers of any hCG variant administration.

Dietary programs

Advertisements trying to sell prescription hCG and novel diets come from medical clinics, doctors' offices, and pharmacies all over the world. These advertisements are in newspapers and even presented by medical correspondents on major TV shows (KSL5 Utah, Fox Morning Show, Mike & Juliet Show, and others). This story starts with one very small study performed in England in the early 1950s. Dr. Simeons conducted a nonblinded, noncontrolled study in which participants were restricted to 500 kcal/day and administered 125 IU supplements of urine-origin hCG [2]. The study had amazing results and led to weight loss. According to Dr. Simeons [2], hCG must mobilize stored fat all over the body and suppresses the appetite. If you search the Internet, there are literally thousands of advertisements for the hCG-based diet of Dr. Simeons.

In 1959, Sohar [3] argued that it was solely the 500-kcal diet that led to the weight loss and that the hCG supplements do absolutely nothing. In the 1960s, Craig et al. [4] and Frank [5] each conducted their own study regarding the Simeons diet. The two separate experiments both agreed that there is no possible or even conceivable relationship between hCG administration and loss of weight or hunger. In the years that followed, physicians profiting from the dietary administration of hCG began performing double-blind studies. These small, inappropriately controlled studies claimed to somehow confirmed that the Simeons diet worked [6,7].

Then, in the 1970s, several double-blind studies were independently performed by Young et al. [8], Stein et al. [9], Greenway and Bray [10], and Shetty and Kalkoff [11]. They all reached the same conclusion as Sohar did in 1959—that hCG has absolutely nothing to do with hunger and fat mobilization and does not promote weight loss. In the 1980s, Richer and Runnebaum [12] reached the same conclusion. In the 1990s, the high-standard controlled studies of Bosch et al. [13] and Lijesen et al. [14] once again confirmed that an hCG diet simply does not work and could not work.

The amount of medical evidence that began accumulating was overwhelming. Countless studies used clean, double-blind, and carefully controlled data to disprove the claims of Simeons' hCG-based diet. It simply does not work [15,16]. It should be noted that in 2007, the USA Federal Trade Commission charged Kevin Trudeau with misrepresentation for writing a book praising the hCG diet [17].

Today, the CV Rao Laboratory [18–20] world experts on hCG biological function, has identified hCG receptors in numerous sites associated with pregnancy, the uterus, the placenta, the fetus, and the brain. The laboratory has not, however, ever found evidence for a receptor in the digestive tract, in the liver, or in adipose tissues that could explain how hCG mobilizes stored fat and suppresses hunger. Thus, Simeons' 1954 results are seemingly false and were apparently contrived to support a new enterprise. Nevertheless, Simeons started a dietary fad, and even after 59 years his diet is still sold throughout the world. Dr. Simeons even published a support book for followers of his diet. Somehow, Simeons became a public and scientific hero for this nonsense diet. After the accumulation of all this evidence, how and why there are still clinics, doctors' offices, and pharmacies completely sold on the hCG diet defies all logic, unless they are falsely led by money.

Yes, hCG will promote emesis or nausea and vomiting. Is this the secret to the diet's claims of exceptional weight loss—extreme hyperemesis or nausea and constant vomiting?

Today, clinics and pharmacies give patients a choice of injectable hCG, hCG drops that one places under the tongue, or hCG-green tea pill [17,21–23]. They claim that each works as well as the other, but there is no evidence, yes absolutely no evidence, to support that hCG can mobilize fats, suppress hunger, or induce euphoria, as claimed.

Surely, the digestive tract destroys this large 37,000 molecular weight glycoprotein hormone before it is absorbed into the circulation. Pills comprising hCG are a fraud. Injectable hCG preparations range from partially purified human pregnancy urine extracts called Profasi, Pregnyl, Novarel, Chorex, and Follotein to super-pure Chinese hamster ovary cell-line recombinant hCG called Ovidrel. All are misused for dietary purposes with claims of great weight loss. It is one thing for a woman to be sold by crazy advertisements about some miracle diet, but it is another to consider the consequence of hCG administration, cessation of menstrual periods, infertility, and hyperemesis gravidarum.

hCG and anabolism promotion

Unquestionably, hCG as a super-potent luteinizing hormone replacement promotes testicular testosterone that acts on muscles and bones to promote growth and anabolism in men. Interestingly, injections of hCG do not promote significant testosterone production in women [24], but rather promote progesterone and androstenedione production [24]. As such, the other illicit use of hCG is in athletics, particularly in major professional sports and world sports such as the Olympic Games. The hormone is also sold on the Internet and in magazine advertisements, purporting to make people strong like Mr. Universe by aiding muscle growth.

Agencies such as the World Anti-Doping Agency (WADA) and the U.S. Anti-Doping Agency (USADA) started to test the urine of Olympic and other international athletes. In the United States, all major athletic associations perform random urine tests that detect testosterone, growth hormone, and the hormone hCG, including the National College Athletic Association, National Football League, National Hockey League, National Basketball League, National League Baseball, and the American League Baseball.

As shown by Stenman et al. [25], hCG can circulate for 7-11 days after injection. The USA hCG Reference Service has shown WADA and USADA that during this period, hCG is gradually degraded to free subunit, to nicked hCG, to nicked molecules missing the β -subunit C-terminal peptide, and finally to β -core fragment. Thus, it is important to measure each of these molecules in urine tests.

Today, most sporting agencies test urine using the Siemens Immulite assay, which is the only automated hCG test that detects all of these degradation products [26,27]. Laidler et al. [28] measured hCG in 1400 men and statistically determined that a 5-mIU/ml cutoff was very acceptable in terms of total hCG concentration present in urine. Delbenke et al. [29] examined 5663 men and found background hCG in men reaching 2.28 mIU/ml. They also supported the 5-mIU/ml sensitivity limit. This is now used as the cutoff in doping studies by WADA and USADA.

hCG variants as dangerous substances

Research presented in this book clearly demonstrates and confirms that hCG variants, most notably hyperglycosylated hCG, hyperglycosylated hCG free β -subunit, extravillous cytotrophoblast hCG and its free β -subunit, are the principal drivers, the malignancy factor of most human cancers (see Chapter 30). These promoters, but not regular hCG, function by binding and antagonizing a TGF β type II receptor [30–32]. Expression of the molecules and their TGF β pathways appear to be a major part of carcinogenesis or human cancer transformation. These agents probably start and maintain all cancers.

These four molecules, hyperglycosylated hCG, hyperglycosylated hCG free β -subunit, extravillous cytotrophoblast hCG and its free β -subunit, appear to transfer cells into malignant cells by driving growth, blocking apoptosis, and driving invasion

(see Chapter 30). As such, if a person has damaged tissues, pre-cancerous tissue, or immune-suppressed cancer tissue in their body, then that person is likely to have that tissue transformed into cancer tissue by the presence of these molecules. Looking at pregnancy urine hCG as discussed in Chapters 5 and 6, it is an average of 84.5% hormone hCG, 1.9% hyperglycosylated hCG and 13.7% extravillous cytotrophoblast hCG. So all urinary concentrates of pregnancy hCG must contain the cancer molecules. We have not studied 100s or 1000s of cases that have received these mixtures but I am sure that a significant number of them eventually developed cancer.

As shown in Table 29.1, most common prescription commercial hCG preparations are contaminated with these molecules. This is probably particularly true regarding hCG pill and hCG nasal drops sold on the Internet. It is inferred that these urinary-derived hCG preparations are highly carcinogenic or very dangerous substances.

One hCG preparation, Serono Ovidrel, is a recombinant form of hCG made with Chinese hamster ovary cells. It is an absolutely pure hormone hCG containing no hyperglycosylated hCG or extravillous cytotrophoblast hCG. This is seemingly the safest form of hCG to use. It still is very slowly or partially dissociated into hCG free β -subunit, one of the cancer promoters [33], so it is not completely harmless. If one has to administer hCG to oneself, then this expensive preparation, Serono Ovidrel, is clearly the only form to use. Ideally, however, one should stay away from all forms of hCG.

Table 29.1 Commercial preparation of hCG and its variants

Preparation	Origin	Hyperglycosylated hCG, extravillous cytotrophoblast hCG	hCG free β -subunit	Biological activity calibrated with WHO 3rd I.S.
Serono Ovidrel	CHO cell recombinant	<0.1%	<0.1%	11,900 IU/mg
Serono Profasi		6.0%	1.6%	10,000 IU/mg
Scripps .99% hCG	Pregnancy urine	2.2%	0.8%	11,000 IU/mg
	Pregnancy urine	6.8%	5%	9000 IU/mg
Scripps .80% hCG	Pregnancy urine	4.0%	5%	5000 IU/mg
Ferring Choragon				3000 IU/mg
Ferring Choragon Organon				2000 IU/mg
Pregnyl Scripps .15% hCG				3000 IU/mg
Sigma C5297				
Organon	Pregnancy urine	7.0%	12%	3000 IU/mg
Pregnyl	Pregnancy urine	13%	13%	2000 IU/mg
Scripps <15% hCG	Pregnancy urine	14%	14%	3000 IU/mg
Sigma C3297				

CHO cells are Chinese hamster ovary

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