Unveiling the Risks: Steroids in Milk and Their Effects on Human Health

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Abstract

More than 6 billion people all over the world consume milk and milk products. More than 750 million people work in households for dairy farming. Steroids have been misused in animals that cause various health conditions for mulch animals as well as humans to increase the production of milk from cattle. Every milk from cattle, goats, or humans contains naturally small amounts of different hormones including estrogen and progesterone. Since hormones such as estrogen are fat-soluble, the hormone level in whole milk is lower than that in skimming milk. Evaluation of steroid milk and dairy products which may cause major health problems.Data mining and bias risk evaluation were performed prior to studies. A systematic examination of the interventions assessed the risk of bias. Few studies have evaluated the effect on milk yield of care. Observational studies showed that the results were very small, thus excluding findings that the concentration of different hormones including prolactin or luteinization hormone (LH) were not very high, such as estrogen, progesterone, oxytocin, growth hormone, thyroid hormone stimulating hormone (TSH). Oxytocin and other hormones are ingested by intestinal enzymes and even minor oxytocin traces are absorbed into milk by the small intestines. Consequently, remove chances for intestinal absorption and cause adverse health effects if any. When conducted for longer periods, it adversely affects animal health and productivity. Although there is no available data or limited information on oxytocin secretions and other milk substances, scientific reports often find a position in the media, requiring scientific validity to be confirmed the same.

Introduction

The percentage of worldwide daily food and a readily available source of protein and calcium is gradually increased by milk and dairy products. More than 50% of the world population consumes milk and dairy products every day, which now absorbs between 30% and 50% of the world's calories, while 50% of the world population consumes milk products (1). The most important components of the human diet in Western and Asian cultures are meat and milk products such as cheese, butter, and yogurt. It can reach 6,000–8,000 kg at present time. It is currently estimated that world milk production exceeds 600 million tons, which is rapidly increasing. Views and hormonal injections are pumped into cattle to raise milk yield. The oxytocin and other hormones inject into the human body by milk or other milk products with a lot of side effects on all(2). The oxytocin injected enters the human body by eating milk or any other dairy product which causes some side effects on everyone (2). In addition to dairy foods, many of them have several hormones that mediate other physiological and pathological functions.(3). Besides, the presence of hormones in dairy products with the potential to disrupt the physiological function of endocrine systems has been a major concern worldwide. (4).

Oxytocin is one of the hormones with which milk can be linked. Some other essential hormones, such as estrogen steroids, progesterone, corticosteroids and androgens, insulin-like growth factors-1 (IGF-1), prostaglandins (PGs), which have an impact on the intake of human’s milk, infants and lifestyle changes for mothers can make bottle feeding a less restrictive diet. According to the World Health Organization (WHO), their natural milk may contain traces of nicotine and caffeine in breastfeeding women with cigarettes or coffee habits (5). Breastfeeding has a different effect on various women. Many mothers find it too painful and distressing, and filling bottles provides a convenient and pain-free alternative. Many do not choose to breastfeed because of family or work pressure. For these causes, both children and mothers suffer from the consumption of milk.

Oxytocin misuse

Oxytocin (OT) is a neurohormone synthesized in corporal luteum for both women and men. The main purpose of oxytocin in women is to stimulate uterine contractures during lactation, to stimulate lactation(5). Though oxytocin is included under Schedule-H drugs, and quacks have concluded that 82% of the cattle breeders use oxytocin injections to milk their cows. The abuse of this medicine was reported(6)(7). As a result of this vigorous process of milk extraction, there may be few disadvantages following the intake of milk, and the bovine may also be affected.

Oxytocin acts to cause rhythmic contractions directly in the smooth muscles of the uterus in all species. Sucking stimulus or udder massage stimulates the somatic nerves in teat which sends signals to the back of the hypophysis and releases a hormone in bovine animals(8). Prolactin, steroids including estrogens, progesterone, corticoids, and androgens, insulin-like growth factor-1 (IGF-1), prostaglandins (PGs) are among the most important hormones found in milk and other milk products by a variety of analytical methods.

Milk proteins are generally made into smaller peptides and amino acids, and milk fats are made into diglycerides, monoglycerides, and free fatty acids. In the hepatic portal, vein is absorbed by Monosaccharides, peptides, amino acids and micronutrients (e.g. calcium). The liver controls the delivery into the rest of the body of these transferred blood nutrients(9).

The present paper draws on the analysis of various studies to determine whether steroid results in milk cause health problems. Any subtle changes in the endocrine function can affect the growth, development, and reproduction of animals and humans exposed.

Results

A greater degree of attention was given to collecting information from different sources focusing on health issues related to steroid hormones in milk and milk products. Because current evidence suggests the most likely effects on breast cancer and prostate cancers, infertile disease issues, oxytocin-adulterated milk in pregnant women as it can lead to abortions and babies born with defects, steroid hormones generally are the major concern for dairy products in steroid hormones. The main concern is steroid hormones it increases the risk of bleeding in mothers during birth and can also stop breastfeeding. Milk, which can cause hormonal disequilibrium leading to human disequilibrium, has the presence of hormonal substances such as prolactin, hormone luteinizing or LH, estrogens, progesterone, oxytocin, hormone development, thyroid stimulation. A list of all steroids that are present in milk and causing various health problems is presented in Table 2.

TABLE 1: Normal values of hormones in the human body

HORMONES	**OXYTOCIN**	**IGF (INSULIN GROWTH HORMONE)**	**GLUCOCORTICOIDS**	**ESTROGEN**	**PROLACTIN**	**PROGESTERONE**	
NORMAL VALUE INHUMANs	0–40pg/mL	10-1000 ng/ml	20 to 136 ng/ml	350pg/ml	3.35–16.4 µg/L	1)Pre-ovulation	3.18 -5-20 ng/mL
						2)Midcycle Males≥ 16 years	15.90-63.60 nmol/L 0.86-
						3)women	2.9ng/mol 30 mg

Table2: Outcome of different steroids in milk.

Steroids in Milk	Animals tested	Concentrations in milk	Health problems in Human if exceeds normal limits.	Reference
OXYTOCIN	a) cows	10pg/mL	Stunted growth,hair loss	(10)(8)
	b) ewes	composition of milk is not affected	Amenorrhea,carcinogenic effects	(11)(8)
IGF (Insulin growth hormone)	Cows	4 ± 1 ng/ml	Pilosebaceous, obesity, gynecomastia	(12)(13)
	Neonatal pig	1.81 +/- 0.56 nmol/L	Prostate tumors	(14),(15)
	Neonatal mice	50 μg/mL	Mucosal growth	(14)
GLUCOCORTICOIDS	a) cows	8 to 18 ng/ml	Risk of ulcers and gastritis	(16)(17)
	b) rat	144 ng/ml	Risk of cholesterol and triglyceride levels	(16),
ESTROGEN	a) cow	7.0±12.7pg/mL	Infertility, early puberty.	(18)
	b) Mice (consume lactating cow milk)	no effects in mice	The decrease in testosterone function	(19)
PROGESTERONE	a) Trail with oral doses in human	12.50ng/ml	Ovarian cancer	(20)(21)
	b) Cow milk	7.6 to 22.5 ng/ml	Hyperplasia	(22)
	c)Goat milk	32 to 99 pg/ml	Breast cancer	(22)
PROLACTIN	Rat	2.4 ± 0.4 ng/ml	Hyperprolactinemia	(20), (23)
	Cow	15.4 ± 1ng/ml	Hyperthyroidism, accumulation of milk in glands	(24)(21)

Case study

We have seen many infants fed on different milk formulas and their body developments. It was not a controlled study or observation but from random observations. All children fed on milk formulas exhibited one or more health issues.

1. Twins born low weight were fed on milk formulas. The twins gained good body weight in 6 months and became overweight after achieving 1 year of age. There was no such history of overweight or obesity in their family both from mother and father. Though it is not scientifically evident of obesity at this age, it suggests further extensive research.
2. A 10-year-old female who fed on milk supplied by milkmaids reported early puberty and another 11-year-old female who fed on milk formulas reporting obesity more than 57kgs. Her medical history includes abnormal thyroid.
3. We have recently studied similar results in the newspaper published on the date: (Oct 01, 2019&Hindustan Times)

Discussion

There are so many assumptions made about the milk and dairy product in which truth-based research has been carried out. We have seen and heard that about the risk of greater body weight, greater overweight in children fed with higher amounts of formula milk seemed to increase.Due to changes in lifestyle, most of the hormones are assumed to be transferred by diffusion to milk**.** Some of the hormones like Prolactin, progesterone, corticosteroids, and androgenic drugs.There is a relation between infant feeding and growth. Milk and milk products provide essential nutrients and are an important source of dietary energy, high-quality proteins, and fats. One of the articles stated that “Milk adulterated with oxytocin should be avoided by pregnant women as it may lead to abortion and babies may be born with deformities. It increases the risk of hemorrhage in mothers after birth and can also inhibit breastfeeding(2) Oxytocin present in milk leads to the hormonal imbalance(25) in one of the experiments oxytocins had no effect on the overall means of plasmin, fat, and protein percentages, indicating that oxytocin does not affect

general milk composition (26). Though one of the researches says "Oxytocin once administered is destroyed by the protein oxytocinase present in liver and excretory organ(27).

Hormones in milk, such as Insulin-like growth factor (IGF-1) and α-lactalbumin, may survive the processing of milk and affect the pilosebaceous unit(12)(28). Milk consumption also increases the production of IGF-1 in premenarchal girls, and acne in women of adults(29)(30). If at all exceeds in concentration it causes early puberty (8-13) years in females. One of the studies concluded that exposing female mouse fetuses to the chemicals at a quantity like that which humans contact normally, caused early puberty(25) Epidemiological evidence stated accuracy of the hypothesis is promoting, which indicates the risk of the colon, pancreas, endometrium, breast and prostate tumors are associated to the high level of IGF-1, insulin, or both(13)

Certain amounts of estrogen in males are required, especially in the elderly, but normally excess estrogen in males leads to disruption of the re-absorption of luminal fluids in the epididymis leading to infertility. The intake of more than the limit of estrogen in the diet decreases the epididymal weight substantially, leading to reduced motility of and concentration of sperm(1).Studies suggest that estrogen acts together with IGF-1 to promote breast development. Estrogen alone cannot aid breast development. So, increasing your blood levels of IGF-1 by drinking rBGH-treated milk, can most definitely give you man boobs (gynecomastia)(31).

Glucocorticoids in breast milk may modulate obesity risk in children's (body, mass, index). Infants exposed to higher milk cortisol levels at 3 months were less likely to exhibit BMIP gains over the first 2 years of life, compared with infants exposed to lower milk cortisol. By age 2, infants exposed to higher milk cortisol levels had lower BMI's than infants exposed to lower milk cortisol. Milk cortisol was a stronger predictor of BMIP change in girls than boys (32).

According to reports by the Joint FAO/WHO Expert Committee on Food Additives (JECFA), the amount of exogenous progesterone that humans are exposed to through ingestion of tissue from treated animals is biologically insignificant, and is incapable of having a biologic effect in humans(33) while other studies showed the 300 μg/day by mouth over the menstrual cycle and observed an inhibition of ovulation in 30 of 50 women Relatively showed large oral doses of progesterone are essential to evoke a contraceptive response in human females (20).

Prostaglandins demonstrated that the levels of PGE_2, $PGF_2\alpha$, and TXB_2 in milk were 2–4 times higher than blood plasma of bovines this indicates that high level of prostaglandins can cause an increase in blood plasma when consumed(14)

Prolact in with Low-caloric diet may suppress prolactin release in plasma and eventually in the milk of women causing accumulation of milk in milk glands. In one of the studies prolactin injection (25 microns/kg) was given to rats which caused accumulation of milk(20). One of the studies has found that the hormonal profile during induced lactation does not accurately duplicate that observed at parturition in that there was no rise in estrogen and prolactin during progesterone decline and the peak of prolactin was lower than that normally observed at parturition.

Cattle treated with rBGH reportedly have a higher incidence of infections in the udder (mastitis)(34). These infections are treated with antibiotics. Like in humans, high use of antibiotics can create resistance to certain bacteria making treatment difficult. It is unknown if the antibiotics used to treat the mastitis create harm in humans(35)

Recombinant bovine growth hormone(rBGH) is a synthetic cow hormone though rBGH has little proven an effect on the human body, studies have found that milk from cows treated with rBGH contains up to 10 times higher levels of insulin-like growth factor-1 (IGF-1) which causes miscarriages, lowered immune function, birth defects, and lameness in their cattle(36). However, the FDA concluded that there is no evidence that a biologically active form is absorbed. Also, the bovine growth hormone is not active in humans(35).

Moreover, heavy metals are not biodegradable and accumulate in the food chain through biotransformation, bioaccumulation, and biomagnifications (37) current evidence, the most recent U.S. guidelines suggest to “Increase intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese(38). In terms of differential effects of the various dairy products, one study compared the effects of isoenergetic (20% of total calories, normalized for lactose and casein) provision of milk (2164 mL), cheese (305 g), and butter (93 g) administered in 3 different sessions during 3 weeks. The cheese had the weakest effect on increasing LDL (low-density lipoproteins)

cholesterol, but whole milk increased concentrations of LDL cholesterol like butter(14)some of the studies suggest consumingonly low-fat milk.

Why we are so much concerned about milk and milk products???

It is evident that infants and toddlers feed on milk formulas gain more weight and may suffer from metabolic disorders like obesity, & hormonal inbalance in future. Though there is limited data, reviewed or further assessed that whatever we drink or consume there could be chances of steroids present in it. We are so much concern that they could exceed the hormonal level in the body which causes malfunction. We see everyday newspapers or in social media about milk and milk products because of the impact that they create on human life perceptively. More studies are needed on the long-term effects of these hormones and antibiotics given to dairy cows (20). Food Safety UK acknowledges about canned milk, preservatives and storages "minute" amounts of (bisphenol-A) BPA can leach into food from cans and packaging, but says the chemical is "rapidly absorbed, detoxified, and eliminated by the body" and therefore "not a risk" to human health at current exposure levels (39).

PROCESSED PRODUCTS	NO OF SAMPLE	FAT %	PROGESTERONE CONCENTRATION (ng/ml)	ESTRONE ng/ml	17BETA-ESTRADIOL ng/ml
WHOLE MILK	4	3.5	9.5	0.13	0.02
BUTTER	4	79.5	132.9	1.47	0.3
CREAM	4	35	72.7	0.26	0.03
SKIM MILK	4	0.01	2.1	-	-

Table 3: Concentration of different hormones in dairy products (24),(21)

Conclusion

Though concentration levels are in minute Nano and Pico grams it causes malfunction of hormones Minute level of concentration hormones if it is not so many newspapers like Hindustan Times, New York times and people are concerned if there is any truth. Though steroids get metabolized and absorbed in the small intestine, even a minute level can disrupt the physiological activity of the endocrine system and have raised greater concern worldwide, socare and precaution should be taken before we consume anything. Any subtle changes in endocrine function may alter the growth, development, and reproduction of exposed animals and humans. We encourage breastfeeding of babies to avoid all these problems.

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