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Common Drug Used by Pork Industry Has Human Cancer Risk

Analysis by Dr. Joseph Mercola | November 22, 2023

STORY AT-A-GLANCE

- November 7, 2023, the U.S. Food and Drug Administration announced it is considering withdrawing approval for the antibiotic carbadox, which is added to pig feed to prevent infections and fatten up the animals, due to cancer concerns
- The drug has been banned in the European Union since 1999, and in Canada since 2006. China, Brazil, Australia and the UK have also banned it due to concerns over its cancer risks
- In 2014, the United Nation's Codex Committee on Residues of Veterinary Drugs in Foods determined that there is no safe level of residues of carbadox or its metabolites in food that represents an acceptable risk to consumers
- Carbadox has been shown to cause liver cancer and birth defects in lab animals, and have long-lasting impacts on the gut microbiome of swine, even after the drug is withdrawn
- A 2017 study found carbadox induced transducing bacteriophages with resistance genes to tetracycline, aminoglycoside and beta-lactam antibiotics — three classes of drugs that are commonly used in human medicine. The findings effectively dismisses the drugmaker's and the National Pork Producers Council's argument that since carbadox is not used in human medicine, it won't contribute to drug resistance in humans

Livestock raised in confined animal feeding operations (CAFOs) are routinely given a range of veterinary drugs to prevent disease, and some of those drugs could potentially

impact the health of those who eat their meat.

November 7, 2023, the U.S. Food and Drug Administration announced it is considering withdrawing approval for the antibiotic carbadox[1] (brand name Mecadox), which is added to pig feed to prevent infections and fatten up the animals, due to cancer concerns. As noted in the Federal Register:[2]

> *"The Food and Drug Administration ... Center for Veterinary Medicine (CVM), is proposing to withdraw approval of all new animal drug applications (NADAs) providing for use of carbadox in medicated swine feed ...*
>
> *This action is based on CVM's determination that there is no approved regulatory method to detect the residue of carcinogenic concern in the edible tissues of the treated swine."*

How a Carcinogen Ended Up Being Used for Decades

Under the Delaney Clause in Section 512 of the Federal Food, Drug, and Cosmetic Act, an animal drug cannot gain FDA approval if it has been found to "induce cancer when ingested by man or animal." In the case of carbadox, the drug was known to cause liver cancer[3] and birth defects[4] in lab animals.

CVM still approved it under an exception to the Delaney Clause, known as the Diethylstilbestrol "DES" Proviso, which allows a carcinogenic drug to be approved if, under the conditions for use, the drug is found to not have an adverse effect on the animals being treated, and if no drug residues can be found "by an approved regulatory method in any edible tissues of, or food from, the animal."[5] As explained by the FDA:[6]

> *"In 1998, the FDA's Center for Veterinary Medicine (CVM) approved the most recent testing method for carbadox based on information available to CVM at that time.*
>
> *The method relied on measuring the noncarcinogenic residue quinoxaline-2-carboxylic acid (QCA) as a marker to demonstrate when the residue of*

carcinogenic concern in the edible tissue of carbadox-treated animals dropped to a level that satisfied the DES Proviso.

However, subsequent information showed that carcinogenic residues of carbadox persist longer than previously known. This means that noncarcinogenic QCA is not a reliable marker ...

Specifically, because there is no established relationship between noncarcinogenic QCA measured by the 1998-approved method and the residue of carcinogenic concern, the 1998-approved method does not allow FDA to determine whether the residue of carcinogenic concern can be found in any edible tissue of, or food derived from, the treated animals.

Accordingly, in November 2023, FDA revoked the 1998-approved method. There is currently no approved method for carbadox. Without an approved method, the second prong of the DES Proviso exception to the Delaney Clause, which requires that 'no residue of such drug will be found …, in any edible portion of such animals after slaughter or in any food yielded by or derived from the living animals,' is not met."

Action Long Overdue

The thing is, FDA has known the original testing method was inadequate for seven years, if not more. In its 2016 proposal to withdraw the drug, the FDA even noted that:[7]

"Continued approval of carbadox would expose humans to concentrations of total residues of carcinogenic concern that are approximately 30 times higher (for the approved 42-day withdrawal period) or 11 times higher (for the approved 70-day withdrawal period) than the 0.915 ppb concentration of total residues of carcinogenic concern in liver that would be considered safe."

Mind you, two years before that, in 2014, the United Nation's Codex Committee on Residues of Veterinary Drugs in Foods determined that "there is no safe level of residues of carbadox or its metabolites in food that represents an acceptable risk to consumers."[8]

> **“There is no safe level of residues of carbadox or its metabolites in food that represents an acceptable risk to consumers. ~ UN Codex Committee on Residues of Veterinary Drugs in Foods”**

Still, nothing happened. It's unclear why the agency didn’t follow through to remove the drug in 2016. The European Union banned carbadox in 1999 and Canada followed suit in 2006.[9] The drug has also been banned in China, Brazil, Australia and the U.K.

According to the National Pork Producers Council, removal of the drug could result in millions of pigs being lost to swine dysentery, for which the drug is being used. However, if carbadox is so essential, how are the pork industries in the EU, Canada and China surviving? Clearly, there must be other alternatives available.

Carbadox Has Long-Lasting Impact on Swine Gut

While carbadox does not appear to cause cancer in pigs, it has been shown to have long-lasting impacts on their gut microbiome. As reported in a 2014 study:[10]

> *"Six pigs (initially 3-weeks old) received feed containing carbadox and six received unamended feed. After 3-weeks of continuous carbadox administration, all pigs were switched to a maintenance diet without carbadox. DNA was extracted from feces (n = 142) taken before, during, and following (6-week withdrawal) carbadox treatment.*
>
> *We found that carbadox altered bacterial membership and community structure relative to non-medicated pigs, including a reduction in total bacteria ... [R]esults show that the swine gut bacterial community changes over time, and that carbadox influences these microbiotas even several weeks after its removal."*

Carbadox May Confer Antibiotic Resistance to Humans

A 2017 study[11] by Johnson et al. confirmed that carbadox has profound effects on the gut microbiome of swine. Importantly, they also found the drug induced transducing bacteriophages with resistance genes to tetracycline, aminoglycoside and beta-lactam antibiotics — three classes of drugs that are commonly used in human medicine.

Bacteriophages have been described as "the viruses of bacteria,"[12] in that they infect cells and mediate horizontal gene transfers by ejecting bacterial DNA. Commenting on the finding, Lance Price with the Milken Institute School of Public health wrote:[13]

> *"[The] findings underscore the potential unforeseen consequences of using antibiotics in livestock production and call into question our current methods for classifying whether or not a veterinary drug has relevance to human health ...*
>
> *[T]here are drugs that are used exclusively in livestock, such as the third-generation cephalosporin ceftiofur or ... enrofloxacin. These two drugs ... are never used in human medicine, but bacteria that evolve resistance to these drugs are also resistant to their human medicine analogs, ceftriaxone and ciprofloxacin, respectively.*
>
> *Large-scale, real-world studies have demonstrated that veterinary use of these antimicrobials can lead to resistant infections in people ... Beyond these shared analogs, there are those that belong to antibiotic classes that are used exclusively in food animals, including ionophores and ... carbadox ...*
>
> *Carbadox has a checkered history in livestock production ... Because it is not considered medically important in human medicine, the drug can be used in livestock without veterinarian oversight ...*
>
> *However, the study by Johnson et al. indicates that using carbadox in food animals may not only increase the risk for cancer and birth defects, but it may also fuel the transmission of phage-encoded antimicrobial resistance genes. Carbadox is genotoxic and mutagenic and thus a potent inducer of the SOS pathway and prophage ...*

> *Paradoxically and relevant to the question of whether carbadox should be considered medically important, some of the transferred genes coded for resistance to antibiotic classes that are commonly used in human medicine, including tetracyclines, aminoglycosides, and beta-lactams ...*
>
> *[I]n actual production settings, the drug would frequently be accompanied or immediately followed by other antibiotics. For some applications, the drug sponsor actually recommends using carbadox in conjunction with oxytetracycline, which would likely fuel the expansion of bacterial populations that acquire tetracycline resistance genes as a result of the carbadox-induced phage transmission.*
>
> *Future studies will have to be conducted to determine whether carbadox acts synergistically with other drugs to encourage the rapid emergence of pathogens resistant to the antibiotics administered along with carbadox."*

Johnson et al.'s findings effectively dismisses the drugmaker's and the National Pork Producers Council's argument that since carbadox is not used in human medicine, it won't contribute to drug resistance in humans.

Other Potentially Hazardous Swine Drugs

Aside from carbadox, which is used in about 40% of hogs raised in the U.S.,[14] many herds are also routinely treated with **customizable mRNA-based "vaccines."** Considering health authorities insist the COVID shots are safe, it's no wonder they also insist there are no problems associated with eating mRNA-treated meat. But can we trust them?

Livestock such as swine are routinely vaccinated against several diseases,[15] and many of these vaccines must be administered at specific times to ensure there's no residue left in the meat. When using the mRNA platform, however, there's no time limit. So, just when are swine receiving these customized mRNA shots? And could there be mRNA in the pork you buy?

Vaccines are nearly always given in the hindquarter of the animal, and according to mRNA jab developers, the mRNA remains at the injection site. This theory has long since been proven false, as the mRNA in the COVID jab gets has been shown to be distributed throughout the human body.

But it makes sense that the mRNA might be more concentrated at the injection site. In livestock, this could be bad news, seeing how the hindquarters are usually where the prime cuts of meat come from.

So, knowing whether there's any mRNA left in the animal at the time of slaughter is important. At present, we have no way of knowing this. We don't even know exactly how long the synthetic lipid-enveloped mRNA stays in the body.

We also don't know how long the antigen produced by the animal's cells in response to a customized mRNA shot sticks around, and whether ingesting that antigen might have repercussions for human health.

Stanford researchers found the spike protein produced in response to the COVID shot remains in the human body for at least 60 days,[16,17] and the spike protein is what's causing most of the health problems associated with the jab.

Could the same be true for mRNA jabs used in animals? Hogs can be killed anywhere from the age of 6 weeks to 10 months, which doesn't allow a whole lot of time for the mRNA and/or antigen to get flushed out.[18]

Due to the uncertainties involved, I strongly recommend avoiding pork products. Pork is also very high in **linoleic acid, a harmful omega-6 fat that drives chronic disease**, which is yet another reason to avoid it.

Sources and References

- [1, 5, 6] FDA Carbadox Q&A
- [2] Federal Register November 7, 2023
- [3] WHO, Carbadox 2003
- [4, 13] mBio September-October 2017; 8(5): e01490-17
- [7] Federal Register April 12, 2016

- [8] FDA April 8, 2016, Download the linked Codex Committee Report, page 38
- [9] Consumerfed.org February 28, 2022 Letter to FDA Commissioner
- [10] Frontiers in Microbiology 2014; 5: 276
- [11, 14] mBio August 8, 2017; 8(4):e00709-17
- [12] PLoS Pathogens August 2019; 15(8): e1007878
- [15] Swine Vaccine Protocol
- [16] Cell January 24, 2022; 185(6): 1025-1040.E14
- [17] Clark County Today February 14, 2022
- [18] FAO Meat Cutting