

ARE THE MILK AND MEAT FROM CLONED COWS SAFE TO EAT ?

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The main underlying food safety concern with clones is whether the cloning process has any influence on the composition of animal food products. There is no fundamental reason to suspect that clones would produce novel toxins or allergens. Several studies examining the composition of products derived from animal clones to those derived from non-cloned cattle found that there were no obvious differences in the composition of milk or meat from cloned cows (Norman and Walsh 2004; Takahashi and Ito 2004; Tian et al 2005; Tome et al 2004; Walsh et al 2003). The FDA's Center for Veterinary Medicine is ultimately



responsible for evaluating the food safety and animal health implications of cloning, as well as its environmental impact (Rudenko et al 2004). Their draft risk assessment on livestock cloning (<http://www.fda.gov/cvm/Documents/CLRAES.pdf>) states that "the current weight of evidence suggests that there are no biological reasons, either based on underlying scientific assumptions or empirical studies, to indicate that consumption of edible products from clones of cattle, pigs, sheep or goats poses a greater risk than consumption of those products from their non-clone counterparts" (Animal Cloning: A Risk Assessment. FDA DRAFT Executive Summary, 10/2003.)

References

- Norman,H.D., Walsh,M.K., 2004. Performance of dairy cattle clones and evaluation of their milk composition. *Cloning and Stem Cells* 6, 157-164.
- Rudenko,L., Matheson,J.C., Adams,A.L., Dubbin,E.S., Greenlees,K.J., 2004. Food consumption risks associated with animal clones: what should be investigated? *Cloning Stem Cells* 6, 79-93.
- Takahashi,S., Ito,Y., 2004. Evaluation of meat products from cloned cattle: Biological and biochemical properties. *Cloning and Stem Cells* 6, 165-171.
- Tian,X.C., Kubota,C., Sakashita,K., Izaike,Y., Okano,R., Tabara,N., Curchoe,C., Jacob,L., Zhang,Y.Q., Smith,S., Bormann,C., Xu,J., Sato,M., Andrew,S., Yang,X.Z., 2005. Meat and milk compositions of bovine clones. *Proceedings of the National Academy of Sciences of the United States of America* 102, 6261- 6266.
- Tome,D., Dubarry,M., Fromentin,G., 2004. Nutritional value of milk and meat products derived from cloning. *Cloning Stem Cells* 6, 172-177.
- Walsh,M.K., Lucey,J.A., Govindasamy-Lucey,S., Pace,M.M., Bishop,M.D., 2003. Comparison of milk produced by cows cloned by nuclear transfer with milk from non-cloned cows. *Cloning and Stem Cells* 5, 213-219.