SRA Webinar Series, Workshop, and Round Table Panel Discussion

Understanding Perceptions and Evidence of Benefits and Risks of Consuming Fresh Unprocessed (Certified Raw or Raw Drinking) Milk

Background

The safety and health benefits associated with fresh unprocessed milk (certified raw milk in the US or raw drinking milk in the UK) merit consideration by SRA risk analysis practitioners and stakeholders. In the past (FDA, 2003), risk and attendant uncertainty, but not benefits, were estimated for pasteurized and ‘pre-pasteurized’ milk (not fresh unprocessed milk from licensed dairies intended for consumption as certified raw milk). As scientific knowledge of the impacts of the human microbiome on health and disease continues to advance, the next generation (NextGen) microbial risk assessments cannot continue to exclude the microbiota. The partnering SRA ROs organized this project to include a webinar series to provide necessary context on the microbiota and the history of the ‘milk wars’ for meaningful exercise of analytic-deliberative process in a workshop and round table panel symposium at the SRA annual meeting in 2017.

Three types of positions on safety of fresh unprocessed milk have been articulated:

- raw certified milk from state-licensed dairies is safe and provides health benefits to consumers;
- raw drinking milk from government-licensed dairies in the UK is safe for healthy adults; and
- all raw milk is poison (innately hazardous) and should not be offered for sale or consumption.

A number of public ‘debates’ in recent years designed by organizations other than SRA have failed to address one simple problem: both sides of the ‘debate’ overstate their confidence that science supports their position, and often imply that no science or only discredited science supports their opponents’ position.

‘Debates’ sponsored by organizations (links to podcasts) other than SRA, including

- International Association of Food Protection (http://www.youtube.com/watch?v=Sin8xrMRHXE)
- Guelph University (http://www.youtu.be/eRgeLWCwco)
- Harvard Food Law Society (http://www.youtube.com/watch?v=iLRdihFig6gw),

increased awareness of some aspects of the controversies, but were not designed to resolve differences of opinion, belief, and perception about benefits and risks. One debater from a university recently closed his anti-raw milk/pro-pasteurization arguments with the opinion that ‘risk associated with raw milk relative to ‘perceived’ benefits is too high [to merit removing the prohibition on sale of raw milk to Canadian consumers who want to buy and consume it] while pasteurized milk is available’. Some debaters believed that because milk can contain pathogens that it is inherently dangerous without pasteurization. Exercise of analytic-deliberative process will differentiate assumptions, beliefs, and perceptions that are based on selected studies, as well as open up deliberations based on the full body of scientific evidence.

Key aspects of risk analysis were missing from these debates. Uncertainty associated with the body of scientific evidence and the risk estimates was not addressed. Neither was the influence of assumptions,
opinions, and policy choices (e.g., use of linear low-dose dose-response models) on risk estimates addressed fully and transparently. The debates did not inform stakeholders that the presence of pathogens in milk is insufficient to predict the likelihood or severity of illness. Reality is that many foods, including deli meats and fruits and vegetables, can contain pathogens, and consumption is not prohibited or restricted. Just as the Paracelsus principle is applied in toxicology and chemical risk assessment, ‘the dose makes the poison’ also applies to interactions of the microbiota and pathogens.

Further, the debates did not mention that no studies formally assessed risk of pasteurized and fresh unprocessed (certified raw) milk as side-by-side, evidence-based comparisons, with attendant uncertainties. One study that compared unpasteurized (pre-pasteurized, not certified raw milk from licensed dairies) and pasteurized milk estimated similar magnitudes of risk of listeriosis, and doses of *Listeria monocytogenes* below 3,100 bacteria were not associated with illnesses in simulations (FDA, 2003, 2008). More recent epidemiologic evidence evaluated by FDA (Pouillot et al., 2016) documents the lack of illnesses consistent with thresholds for listeriosis from contaminated ice cream in the general population of consumers, while the only illnesses documented were in highly susceptible immunocompromised patients hospitalized with other underlying diseases. The dense and diverse milk microbiota may offer another threshold mechanism inconsistent with the overly conservative assumption that ingestion of a single *Listeria monocytogenes* bacterium (and other pathogens) causes illness in healthy humans.

By proposing a three-phase project that links and builds on dialogue at the webinar series, workshop, and round table symposium, the ROs seek to provide more extensive opportunities for beginning formal analytic-deliberative process with stakeholders that past debates have not provided.