

# Innovative Meat By-Products

The UA Meat Lab increases the value of each animal

**L**iver slivers, emu jerky, beef neck strap chews — these by-products come out of The University of Arizona Meat Lab nearly every week, along with the usual steaks, roasts, ribs and chops.

John Marchello, a meat scientist in the Department of Animal Sciences in the College of Agriculture, has developed a group of successful meat and poultry by-products in response to requests from ranchers and processors.

"The definition of a meat by-product is anything that comes from the slaughter of a meat animal," Marchello says. "Meat animals include cattle, sheep, swine and goats." In addition, the meat lab staff slaughters and processes ostrich and emu, which are considered poultry.

A slaughtered animal yields both edible and inedible by-products, determined through federal inspection. Inedible products must be denatured and discarded so they can't be consumed. Parts that are rated for human consumption are prepared according to guidelines that also make them suitable for pets to consume. All of the meat by-products Marchello produces go to the pet feed industry, primarily for treats.

"We've improved the value of each animal by \$40 to \$50 with these products," he says. "With a beef animal, for example, a large number of by-products can be made human consumable."

These include cooked and smoked beef bones; organs such as heart, liver and kidney; and connective tissue, including tendons and neck straps (connective tissue joining the head to the back). Poultry products from the lab include smoked and dried ostrich, turkey and emu necks, emu and ostrich jerky, and ostrich and emu Italian and summer sausage.

The meat lab employs five full-time staff members in addition to Marchello, and three students. Marchello says they also hire several students from local high school vocational agriculture programs to give them some experience.

Together they process thousands of pounds of animal products each month. They guarantee constant production by freezing product in a raw state to process at slower times of year. Marchello oversees the entire process from slaughter to packaging, and he is always looking for new ways to prepare different animal parts.

"Someone came to us, asking for cooked bones for dogs," Marchello says. "We're producing seven different sizes of bones, from extra-small to large. We also process beef knuckles, which are the most popular. We have a procedure where we put them into our cookers to make them shelf-stable. They are cooked to enhance color and appearance, and to intensify flavor."

Marchello says if these bones were not approved for human consumption, he would have to denature them. Many of the longer beef bones that normally would be rendered inedible can be salvaged this way.

As for organ meats used as pet food, most are cooked, smoked and ground into crumbles or dried as jerky. "We generate a lot of beef liver," Marchello explains. "We developed a cooked, shelf-stable product called 'liver slivers,' a name that was approved through special labeling. This is a popular item. We also cook livers into patties, and into crumbly pieces that we pack in plastic tumblers for pet trainers to use as rewards." Hearts become heart jerky, while ground kidneys are cooked to a crumble about the size of a whole-grain cereal.

Beef neck straps, both small and large, cook down into brittle dog chews about the length and width of a long bar of taffy. Marchello also makes chews from beef tendons and oxtails. All are then smoked to make them shelf-stable.

One product is so original the UA is applying for a patent on it, according to Marchello.

"We developed a new shelf-stable pet product here according to our own formula, that includes 50% meat, along with peas and carrots," he says. "A small amount of beef tendons give it some mass. We add garlic, and smoke the roll with mesquite to enhance flavor."

The lab also makes a beef log, which has more beef in it than the beef roll. Both the beef roll and the log are cooked in a casing and thus look like sausage. Although suitable for human consumption, the

product will be sold for pets to eat. Once the process is perfected, Marchello plans to do the same thing with mutton, emu and ostrich.

The last two are gaining in popularity, with an increased demand for ostrich because it is a lean meat. "The industry picked it up for the overweight dog," Marchello notes. "Some people are trying to incorporate that into dog biscuits."

Some of the ostrich and emu meat he prepares as crumbles, and the necks he leaves whole because it's so labor-intensive to remove the meat. Instead, he cooks and smokes the necks into a hard curved stick that dogs can chew on in place of a bone.

Marchello often gives talks on emu and ostrich products for producers who want to know about the range of items they can obtain from these birds and the costs involved in processing them.

After processing, the meat lab staff seals the organ meats in three-ounce bags, and shrink-wraps the bones, necks and neck straps. They package the one-pound beef rolls and logs in either clear and colored casings, depending on specifications from the distributors. The UA Meat Lab currently produces these by-products for several different pet food companies.

Each product must have label approval from the Food Safety and Inspection Service (FSIS). Nutrient analyses are provided. As long as an item has the inspection legend on it, it can be shipped interstate. The UA meat lab follows and teaches strict federal regulations for sanitation and food safety, including intensive measures for cleaning, sterilizing, monitoring and record keeping. All students and employees complete this training.

— Susan McGinley



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