Animal Experiments Funded by the Research and Promotion Boards

Below is a list of descriptions of animal experiments published between 2015 and 2019 that were funded by the various research and promotion (R&P) boards overseen by the Agricultural Marketing Service (AMS) of the United States Department of Agriculture (USDA). These experiments were funded purportedly to establish human health claims for marketing the agricultural products and ingredients promoted by the R&P boards.

Hass Avocado Board

- Experimenters fed mice a high-fat diet, repeatedly force-fed them an avocado ingredient, starved them for eight hours, injected them with glucose and insulin, repeatedly bled them from their tails, killed them by suffocating them and draining their blood, and dissected them.[1]

U.S. Highbush Blueberry Council

- Experimenters repeatedly starved mice, repeatedly took their blood, repeatedly injected them with a chemical that induces menopause, douched their vaginas, fed them a high-fat diet with blueberries, injected them with insulin, and killed and dissected them.[2]
- Experimenters fed rats strawberries or blueberries; forced them to perform a series of stress-inducing psychomotor and cognitive tests, including grabbing wires while suspended, walking or balancing on accelerating rotating rods, and swimming in a maze; repeatedly injected them with a chemical; and killed and dissected them. Five rats were killed before the end of experiment owing to excessive weight loss.[3]
- Experimenters fed rats blueberries; changed their cagemates daily; repeatedly restrained them in tubes smeared with cat food with a cat in the room, inducing post-traumatic stress disorder–like symptoms in the rats; forced them to perform a stress-inducing behavioral test; and killed and dissected them.[4]
- Experimenters injected mice with cancer cells, fed them blueberries or black raspberries, and killed them.[5]
- Experimenters fed mice a high-fat diet with blueberries, took their blood, and killed and dissected them.[6]

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[1]Ahmed, N., Tcheng, M., Roma, A., Buraczynski, M., Jayanth, P., Rea, K., Akhtar, T. A., & Spagnuolo, P. A. (2019). Avocatin B protects against lipotoxicity and improves insulin sensitivity in diet-induced obesity. *Molecular Nutrition & Food Research*, *63(*24), 1900688.

[2]Elks, C. M., Terrebonne, J. D., Ingram, D. K., & Stephens, J. M. (2015). Blueberries improve glucose tolerance without altering body composition in obese postmenopausal mice. *Obesity*, *23*(3), 573–580.

[3]Shukitt-Hale, B., Bielinski, D. F., Lau, F. C., Willis, L. M., Carey, A. N., & Joseph, J. A. (2015). The beneficial effects of berries on cognition, motor behaviour and neuronal function in ageing. *British Journal of Nutrition*, *114(*10), 1542–1549.

[4]Ebenezer, P. J., Wilson, C. B., Wilson, L. D., Nair, A. R., & Francis, J. (2016). The anti-inflammatory effects of blueberries in an animal model of post-traumatic stress disorder (PTSD). *PLoS One*, *11*(9), e0160923.

[5]Aqil, F., Jeyabalan, J., Kausar, H., Munagala, R., Singh, I. P., & Gupta, R. (2016). Lung cancer inhibitory activity of dietary berries and berry polyphenolics. *Journal of Berry Research*, *6(*2), 105–114.

[6]Carey, A. N., Gildawie, K. R., Rovnak, A., Thangthaeng, N., Fisher, D. R., & Shukitt-Hale, B. (2019). Blueberry supplementation attenuates microglia activation and increases neuroplasticity in mice consuming a high-fat diet. *Nutritional Neuroscience*, *22*(4), 253-263.

- Experimenters fed rats blueberries, restrained them in plastic tubes, rendered them cognitively impaired by irradiating them, forced them to perform confusing and stress-inducing memory tasks, killed them by cutting off their heads, and dissected them.[7]
- Experimenters fed mice a high-fat diet, cut off 70% of their stomach, starved them, injected them with glucose, took their blood, and killed and dissected them.[8]
- Experimenters fed mice a high-fat diet, repeatedly starved them, repeatedly took their blood, cut off 70% of their stomach, inserted a catheter into their arteries, and killed and dissected them.[9]
- Experimenters fed rats a high-fat diet with blueberries, repeatedly starved them, force-fed them glucose, repeatedly took their blood, and killed and dissected them.[10]
- Experimenters fed mice a high-fat diet with blueberries and killed and dissected them.[11]
- Experimenters surgically injured rats' brains, fed them blueberries, forced them to perform stress-inducing behavioral tests such as getting through mazes, and killed and dissected them.[12]
- Experimenters fed mice a high-fat diet with or without blueberries, repeatedly starved them for 16 hours, injected them with glucose and insulin, repeatedly took their blood, and killed and dissected them.[13]

Mushroom Council

- Experimenters fed rats white button mushrooms and forced them to perform several stress-inducing motor and cognitive tests, such as walking on balance beams and rotating rods and swimming through a water maze. Fourteen rats died or had to be killed early because of excessive weight loss.[14]
- Experimenters fed mice white button mushrooms, starved them for 15 hours, injected them with glucose, took their blood, and killed and dissected them.[15]

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[7] Poulose, S. M., Rabin, B. M., Bielinski, D. F., Kelly, M. E., Miller, M. G., Thanthaeng, N., & Shukitt-Hale, B. (2017). Neurochemical differences in learning and memory paradigms among rats supplemented with anthocyanin-rich blueberry diets and exposed to acute doses of ^{56}Fe particles. *Life Sciences in Space Research, 12*, 16–23.

[8] McGavigan, A. K., Garibay, D., Henseler, Z. M., Chen, J., Bettaieb, A., Haj, F. G., Ley, R. E., Chouinard, M. L., & Cummings, B. P. (2017). TGR5 contributes to glucoregulatory improvements after vertical sleeve gastrectomy in mice. *Gut*, *66*(2), 226–234.

[9] McGavigan, A. K., Henseler, Z. M., Garibay, D., Butler, S. D., Jayasinghe, S., Ley, R. E., Davisson, R. L., & Cummings, B. P. (2017). Vertical sleeve gastrectomy reduces blood pressure and hypothalamic endoplasmic reticulum stress in mice. *Disease Models & Mechanisms*, *10*(3), 235–243.

[10] Lee, S., Keirsey, K. I., Kirkland, R., Grunewald, Z. I., Fischer, J. G., & de La Serre, C. B. (2018). Blueberry supplementation influences the gut microbiota, inflammation, and insulin resistance in high-fat-diet-fed rats. *The Journal of Nutrition*, *148*(2), 209–219.

[11] Lewis, E. D., Ren, Z., DeFuria, J., Obin, M. S., Meydani, S. N., & Wu, D. (2018). Dietary supplementation with blueberry partially restores T-cell-mediated function in high-fat-diet-induced obese mice. *British Journal of Nutrition*, *119*(12), 1393–1399.

[12] Krishna, G., Ying, Z., & Gomez-Pinilla, F. (2019). Blueberry supplementation mitigates altered brain plasticity and behavior after traumatic brain injury in rats. *Molecular Nutrition & Food Research*, *63*(15), e1801055.

[13] Liu, W., Mao, Y., Schoenborn, J., Wang, Z., Tang, G., & Tang, X. (2019). Whole blueberry protects pancreatic beta-cells in diet-induced obese mouse. *Nutrition & Metabolism*, *16*, 34.

[14] Thangthaeng, N., Miller, M. G., Gomes, S. M., & Shukitt-Hale, B. (2015). Daily supplementation with mushroom (*Agaricus bisporus*) improves balance and working memory in aged rats. *Nutrition Research*, *35*(12), 1079–1084.

[15] Tian, Y., Nichols, R. G., Roy, P., Gui, W., Smith, P. B., Zhang, J., Lin, Y., Weaver, V., Cai, J., Patterson, A. D., & Cantorna, M. T. (2018). Prebiotic effects of white button mushroom (*Agaricus bisporus*) feeding on succinate and intestinal gluconeogenesis in C57BL/6 mice. *Journal of Functional Foods*, *45*, 223-232.

- Experimenters fed pigs white button mushrooms, repeatedly poked their anuses, took their blood, and killed and dissected them.[16]
- Experimenters fed genetically modified mice who were prone to atherosclerosis a high-fat diet with or without shiitake or portobello mushroom, suffocated them to death and drained their blood, and dissected them.[17]

National Mango Board

- Experimenters injected mice with cancer cells, repeatedly force-fed them mango extracts, and killed and dissected them.[18]
- Experimenters fed mice a high-fat diet with mangoes, starved them, took their blood, and killed and dissected them.[19]
- Experimenters fed rats mangoes or pomegranates, fed them a chemical that induces colitis, and killed and dissected them.[20]
- Experimenters fed rats mangoes, fed them a chemical that induces colitis, and killed and dissected them.[21]
- Experimenters fed rats mango juice, repeatedly fed them a chemical that induces colitis, and killed and dissected them.[22]

National Processed Raspberry Council (Disbanded)

- Experimenters fed mice a high-fat diet with raspberries, starved them, injected them with glucose, repeatedly took their blood, and killed and dissected them.[23,24]

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[16] Solano-Aguilar, G. I., Jang, S., Lakshman, S., Gupta, R., Beshah, E., Sikaroodi, M., Vinyard, B., Molokin, A., Gillevet, P. M., & Urban, J. F. (2018). The effect of dietary mushroom *Agaricus bisporus* on intestinal microbiota composition and host immunological function. *Nutrients*, *10*(11), 1721.

[17] Kim, S. H., Thomas, M. J., Wu, D., Carman, C. V., Ordovás, J. M., & Meydani, M. (2019). Edible mushrooms reduce atherosclerosis in Ldlr−/− mice fed a high-fat diet. *The Journal of Nutrition*, *149*(8), 1377–1384.

[18] Nemec, M. J., Kim, H., Marciante, A. B., Barnes, R. C., Hendrick, E. D., Bisson, W. H., Talcott, S. T., & Mertens-Talcott, S. U. (2017). Polyphenolics from mango (*Mangifera indica* L.) suppress breast cancer ductal carcinoma in situ proliferation through activation of AMPK pathway and suppression of mTOR in athymic nude mice. *The Journal of Nutritional Biochemistry*, *41*, 12–19.

[19] Ojo, B., El-Rassi, G. D., Payton, M. E., Perkins-Veazie, P., Clarke, S., Smith, B. J., & Lucas, E. A. (2016). Mango supplementation modulates gut microbial dysbiosis and short-chain fatty acid production independent of body weight reduction in C57BL/6 mice fed a high-fat diet. *The Journal of Nutrition*, *146*(8), 1483–1491.

[20] Kim, H., Banerjee, N., Ivanov, I., Pfent, C. M., Prudhomme, K. R., Bisson, W. H., Dashwood, R. H., Talcott, S. T., & Mertens-Talcott, S. U. (2016). Comparison of anti-inflammatory mechanisms of mango (*Mangifera indica* L.) and pomegranate (*Punica granatum* L.) in a preclinical model of colitis. *Molecular Nutrition & Food Research*, *60*(9), 1912–1923.

[21] Kim, H., Banerjee, N., Barnes, R. C., Pfent, C. M., Talcott, S. T., Dashwood, R. H., & Mertens-Talcott, S. U. (2017). Mango polyphenolics reduce inflammation in intestinal colitis—involvement of the miR-126/PI3K/AKT/mTOR axis in vitro and in vivo. *Molecular Carcinogenesis*, *56*(1), 197–207.

[22] Kim, H., Krenek, K. A., Fang, C., Minamoto, Y., Markel, M. E., Suchodolski, J. S., Talcott, S. T., & Mertens-Talcott, S. U. (2018). Polyphenolic derivatives from mango (*Mangifera indica* L.) modulate fecal microbiome, short-chain fatty acids production and the HDAC1/AMPK/LC3 axis in rats with DSS-induced colitis. *Journal of Functional Foods*, *48*, 243–251.

[23] Luo, T., Miranda-Garcia, O., Adamson, A., Sasaki, G., & Shay, N. F. (2016). Development of obesity is reduced in high-fat fed mice fed whole raspberries, raspberry juice concentrate, and a combination of the raspberry phytochemicals ellagic acid and raspberry ketone. *Journal of Berry Research*, *6*(2), 213–223.

[24] Luo, T., Miranda-Garcia, O., Sasaki, G., & Shay, N. F. (2017). Consumption of a single serving of red raspberries per day reduces metabolic syndrome parameters in high-fat fed mice. *Food & Function*, *8*(11), 4081–4088.

- Experimenters repeatedly starved rats, repeatedly took their blood, injected them with a chemical that induces diabetes, injected them with plant metabolites commonly found after eating raspberries, inserted a catheter into their arteries, and killed and dissected them.[25]
- Experimenters mated mice, swabbed their vaginas, fed them a high-fat diet with an ingredient common in grapes and raspberries, killed some of the babies, fed the remaining babies a high-fat diet, starved them, injected them with glucose, repeatedly took their blood, put them in a room where the temperature was 4°C for six hours, repeatedly shoved a thermometer into their rectums, killed both the mothers and babies by breaking their necks, and dissected them.[26]
- Experimenters fed mice a high-fat diet with raspberries, starved them, injected them with glucose or insulin, repeatedly took their blood, killed them by breaking their necks, and dissected them.[27]
- Experimenters forced rats to perform a series of stress-inducing psychomotor and cognitive tests, including grabbing wires while suspended, walking or balancing on accelerating rotating rods, swimming in a maze, and grabbing a metal grid while being pulled by the tail. Experimenters then took their blood, fed them raspberries, and killed and dissected them. Eighteen rats died or had to be killed early because of excessive weight loss.[28]
- Experimenters fed mice a high-fat diet with raspberries and killed and dissected them.
- Experimenters bred mice, repeatedly injected them with a chemical that induces a genetic defect, fed them a high-fat diet with raspberries, starved them, injected them with glucose, repeatedly took their blood, killed them by breaking their necks, and dissected them.[29]
- Experimenters fed mice raspberries and then a chemical that induces colitis and killed and dissected them.[30]
- Experimenters fed mice raspberries and then a chemical that induces colitis, killed them by breaking their necks, and dissected them.[31]
- Experimenters fed rats a Western diet with raspberries, repeatedly restrained them and cuffed their tails, took their blood, starved them for 18 hours, killed them by cutting off their heads, and dissected them.[32]

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[25] Savi, M., Bocchi, L., Mena, P., Dall'Asta, M., Crozier, A., Brighenti, F., Stilli, D., & Del Rio, D. (2017). In vivo administration of urolithin A and B prevents the occurrence of cardiac dysfunction in streptozotocin-induced diabetic rats. *Cardiovascular Diabetology*, *16*(1), 80.

[26] Zou, T., Chen, D., Yang, Q., Wang, B., Zhu, M. J., Nathanielsz, P. W., & Du, M. (2017). Resveratrol supplementation of high-fat diet-fed pregnant mice promotes brown and beige adipocyte development and prevents obesity in male offspring. *The Journal of Physiology*, *595*(5), 1547–1562.

[27] Zhu, M. J., Kang, Y., Xue, Y., Liang, X., González García, M. P., Rodgers, D., Kagel, D. R., & Du, M. (2018). Red raspberries suppress NLRP3 inflammasome and attenuate metabolic abnormalities in diet-induced obese mice. *The Journal of Nutritional Biochemistry*, *53*, 96–103.

[28] Shukitt-Hale, B., Thangthaeng, N., Kelly, M. E., Smith, D. E., & Miller, M. G. (2017). Raspberry differentially improves age-related declines in psychomotor function dependent on baseline motor ability. *Food & Function*, *8*(12), 4752–4759.

[29] Zou, T., Wang, B., Yang, Q., de Avila, J. M., Zhu, M. J., You, J., Chen, D., & Du, M. (2018). Raspberry promotes brown and beige adipocyte development in mice fed high-fat diet through activation of AMP-activated protein kinase (AMPK) α1. *The Journal of Nutritional Biochemistry*, *55*, 157–164.

[30] Bibi, S., Du, M., & Zhu, M. J. (2018). Dietary red raspberry reduces colorectal inflammation and carcinogenic risk in mice with dextran sulfate sodium–induced colitis. *The Journal of Nutrition*, *148*(5), 667–674.

[31] Bibi, S., Kang, Y., Du, M., & Zhu, M. J. (2018). Dietary red raspberries attenuate dextran sulfate sodium-induced acute colitis. *The Journal of Nutritional Biochemistry*, *51*, 40-46.

[32] Kirakosyan, A., Seymour, E. M., Kondoleon, N., Gutierrez, E., Wolforth, J., & Bolling, S. (2018). The intake of red raspberry fruit is inversely related to cardiac risk factors associated with metabolic syndrome. *Journal of Functional Foods*, *41*, 83–89.

- Experimenters repeatedly injected genetically modified mice who were prone to diabetes with a drug that induces diabetes, fed them a high-fat diet with or without raspberries, and killed and dissected them.[33]
- Experimenters fed mice a high-fat diet with or without raspberries, forced them to perform stress-inducing behavioral tests such as going through mazes, took blood straight from their hearts, and killed and dissected them.[34]
- Experimenters fed mice a high-fat diet with or without raspberries, killed them by suffocating them and breaking their necks, and dissected them.[35]
- Experimenters fed raspberries to genetically obese rats and killed and dissected them.[36]
- Experimenters fed red raspberries to genetically obese rats, starved them overnight, killed them by suffocating them and draining their blood, and dissected them.[37]

National Watermelon Promotion Board

- Experimenters repeatedly force-fed rats watermelon or a watermelon ingredient, injected them with a carcinogen, and killed and dissected them.[38]
- Experimenters fed rats watermelon or a watermelon ingredient and took their blood.[39]
- Experimenters fed rats watermelon, took their blood, and killed and dissected them.[40]
- Experimenters fed rats an atherogenic diet with or without watermelon, suffocated them to death, took their blood, and dissected them.[41]

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[33]Zhao, L., Zou, T., Gomez, N. A., Wang, B., Zhu, M. J., & Du, M. (2018). Raspberry alleviates obesity-induced inflammation and insulin resistance in skeletal muscle through activation of AMP-activated protein kinase (AMPK) α1. *Nutrition & Diabetes*, *8*(1), 39.

[34]Carey, A. N., Pintea, G. I., Van Leuven, S., Gildawie, K. R., Squiccimara, L., Fine, E., Rovnak, A., & Harrington, M. (2019). Red raspberry (*Rubus ideaus*) supplementation mitigates the effects of a high-fat diet on brain and behavior in mice. *Nutritional Neuroscience*, 1–11.

[35]Zou, T., Kang, Y., Wang, B., de Avila, J. M., You, J., Zhu, M. J., & Du, M. (2019). Raspberry supplementation reduces lipid accumulation and improves insulin sensitivity in skeletal muscle of mice fed a high-fat diet. *Journal of Functional Foods*, *63*, 103572.

[36]VandenAkker, N., Vendrame, S., & Klimis-Zacas, D. (2019). Red raspberry (*Rubus idaeus*) consumption attenuates inflammation in the obese Zucker rat, a model of the Metabolic Syndrome (OR24-01-19). *Current Developments in Nutrition*, *3*(Suppl. 1), nzz031.OR24-01-19.

[37]Waite, J. (2019). *Genomic and proteomic effects of red raspberry (*Rubus idaeus*) consumption on the perivascular adipose tissue of the obese Zucker rat, a model of human metabolic syndrome* (Unpublished undergraduate dissertation). University of Maine, Orono, Maine.

[38]Beidler, J., Hunter, A., Tunstall, A. M., Kern, M., Hooshmand, S., Figueroa, A., & Hong, M. Y. (2016). Effects of watermelon and L-arginine consumption on serum lipid profile, inflammation, and oxidative stress in rats. *FASEB Journal*, *30*(S1), lb289-lb289.

[39]Kalaba, M., Klarich, D. S., & Hong, M. Y. (2016). Effect of watermelon powder supplementation on colonic aberrant crypt foci formation. *FASEB Journal*, *30*(S1), lb280-lb280.

[40]Beidler, J., Hooshmand, S., Kern, M., Figueroa, A., & Hong, M. Y. (2018). Watermelon and L-arginine consumption regulate gene expression related to serum lipid profile, inflammation, and oxidative stress in rats fed an atherogenic diet. *FASEB Journal*, *31*(S1), 431–432.

[41]Hong, M. Y., Beidler, J., Hooshmand, S., Figueroa, A., & Kern, M. (2018). Watermelon and L-arginine consumption improve serum lipid profile and reduce inflammation and oxidative stress by altering gene expression in rats fed an atherogenic diet. *Nutrition Research*, *58*, 46–54.

- Experimenters fed rats watermelon, repeatedly injected them with a carcinogen that induces colon cancer, and killed and dissected them.[42,43]
- Experimenters fed mice a high-fat diet with various parts of watermelon, starved them, injected them with glucose, repeatedly bled them from their tails, took blood straight from their hearts, killed them by breaking their necks, and dissected them.[44]
- Experimenters fed rats a high-fat diet with or without watermelon, fed them a chemical that induces colitis, starved them, suffocated them to death, and dissected them.[45]
- Experimenters fed mice a high-fat diet with various parts of watermelon and killed and dissected them.[46]

United Sorghum Checkoff Program
- Experimenters fed rats sorghum bran and a chemical that induces colitis and killed and dissected them.[47,48]

United Soybean Board
- Experimenters fed rats casein, soy protein, corn oil, soybean oil, or salmon oil and killed and dissected them.[49,50]
- Experimenters injected mice with cancer cells, repeatedly injected them with an immunosuppressive drug and other substances, repeatedly force-fed them two plant ingredients, and killed and dissected them.[51]

[42]Glenn, K., Klarich, D. S., Kalaba, M., Figueroa, A., Hooshmand, S., Kern, M., & Hong, M. Y. (2018). Effects of watermelon powder and l-arginine supplementation on azoxymethane-induced colon carcinogenesis in rats. *Nutrition and Cancer*, *70*(6), 938–945.
[43]Fesseha, M., & Hong, M. Y. (2019). Effects of watermelon consumption on cellular proliferation, and apoptosis in rat colon (P05-019-19). *Current Developments in Nutrition*, *3*(Supplement_1), nzz030.P05-019-19.
[44]Becraft, A. R., Sturm, M. L., Mendez, R. L., Park, S. H., Lee, S. I., & Shay, N. F. (2020). Intake of watermelon or its byproducts alters glucose metabolism, the microbiome, and hepatic proinflammatory metabolites in high-fat–fed male C57BL/6 J mice. *The Journal of Nutrition*, *150*(3), 434–442.
[45]Hong, M. Y., Tseng, Y. T., Kalaba, M., & Beidler, J. (2019). Effects of watermelon powder supplementation on colitis in high-fat diet-fed and dextran sodium sulfate-treated rats. *Journal of Functional Foods*, *54*, 520–528.
[46]Becraft, A., Sturm, M., Pierce, G., Mendez, R., & Shay, N. (2019). Hepatic metabolomic analysis in mice fed a high fat diet with watermelon and watermelon byproducts shows improved lipid metabolism and reduction of chronic inflammation (P06-023-19). *Current Developments in Nutrition*, *3*(Suppl 1), nzz031.P06-023-19.
[47]Ritchie, L. E., Sturino, J. M., Carroll, R. J., Rooney, L. W., Azcarate-Peril, M. A., & Turner, N. D. (2015). Polyphenol-rich sorghum brans alter colon microbiota and impact species diversity and species richness after multiple bouts of dextran sodium sulfate-induced colitis. *FEMS Microbiology Ecology*, *91*(3), fiv008.
[48]Ritchie, L. E., Taddeo, S. S., Weeks, B. R., Carroll, R. J., Dykes, L., Rooney, L. W., & Turner, N. D. (2017). Impact of novel sorghum bran diets on DSS-induced colitis. *Nutrients*, *9*(4), 330.
[49]Maditz, K. H., Smith, B. J., Miller, M., Oldaker, C., & Tou, J. C. (2015). Feeding soy protein isolate and oils rich in omega-3 polyunsaturated fatty acids affected mineral balance, but not bone in a rat model of autosomal recessive polycystic kidney disease. *BMC Nephrology*, *16*, 13.
[50]Maditz, K. H., Benedito, V. A., Oldaker, C., Nanda, N., Lateef, S. S., Livengood, R., & Tou, J. C. (2015). Feeding soy protein isolate and n-3 PUFA affects polycystic liver disease progression in a PCK rat model of autosomal polycystic kidney disease. *Journal of Pediatric Gastroenterology and Nutrition*, *60*(4), 467–473.
[51]Chakrabarti, M., & Ray, S. K. (2016). Anti-tumor activities of luteolin and silibinin in glioblastoma cells: Overexpression of miR-7-1-3p augmented luteolin and silibinin to inhibit autophagy and induce apoptosis in glioblastoma in vivo. *Apoptosis*, *21*(3), 312–328.

- Experimenters repeatedly injected a soy ingredient into mice whose ovaries had been cut out, suffocated them to death, and dissected them.[52]
- Experimenters fed or repeatedly injected a soy ingredient into genetically modified mice who were prone to cystic fibrosis, suffocated them to death, took blood straight from their hearts, and dissected them.[53]
- Experimenters fed genetically obese mice a soy ingredient, suffocated them to death, and dissected them.[54,55,56]
- Experimenters fed mice a soy ingredient, suffocated them to death, and dissected them.[57]
- Experimenters fed mice soybean oil or coconut oil, starved them, took their blood, and killed and dissected them.[58]
- Experimenters injected mice with a carcinogen, fed them casein or soy protein, and killed and dissected them.[59]
- Experimenters fed genetically obese mice a soy ingredient and killed and dissected them.[60]
- Experimenters fed genetically modified mice who were prone to cystic fibrosis a soy ingredient or a laxative and killed and dissected them. Forty-nine animals died of the disease before they could be killed by the experimenters.[61]
- Experimenters repeatedly force-fed genetically modified mice who were prone to diabetes a soy ingredient, injected them with cancer cells, starved them for 15 hours, injected them with glucose and insulin, repeatedly took their blood, suffocated them to death, and dissected them.[62]

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[52] Leung, L., Bhakta, A., Cotangco, K., & Al-Nakkash, L. (2015). Genistein stimulates jejunum chloride secretion via an Akt-mediated pathway in intact female mice. *Cellular Physiology and Biochemistry, 35*, 1317–1325.

[53] Rayyan, E., Polito, S., Leung, L., Bhakta, A., Kang, J., Willey, J., Mansour, W., Drumm, M. L., & Al-Nakkash, L. (2015). Effect of genistein on basal jejunal chloride secretion in R117H CF mice is sex and route specific. *Clinical and Experimental Gastroenterology, 8*, 77–87.

[54] Catmull, S., Masood, F., Schacht, S., Dolan, R., Stegman, D., Leung, L., & Al-Nakkash, L. (2016). Dietary genistein rescues reduced basal chloride secretion in diabetic jejunum via sex-dependent mechanisms. *Cellular Physiology and Biochemistry*, *40(*1–2), 335–346.

[55] Michelin, R. M., Al-Nakkash, L., Broderick, T. L., & Plochocki, J. H. (2016). Genistein treatment increases bone mass in obese, hyperglycemic mice. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy, 9*, 63–70.

[56] Schacht, S., Masood, F., Catmull, S., Dolan, R., Altabtabaee, R., Grow, W., & Al-Nakkash, L. (2017). Dietary genistein influences number of acetylcholine receptors in female diabetic jejunum. *Journal of Diabetes Research*, *2017*, 3568146.

[57] Leung, L., Martin, J. B., Lawmaster, T., Arthur, K., Broderick, T. L., & Al-Nakkash, L. (2016). Sex-dependent effects of dietary genistein on echocardiographic profile and cardiac GLUT4 signaling in mice. *Evidence-Based Complementary and Alternative Medicine, 2016*, 1796357.

[58] Deol, P., Fahrmann, J., Yang, J., Evans, J. R., Rizo, A., Grapov, D., Salemi, M., Wanichthanarak, K., Fiehn, O., Phinney, B., Hammock, B. D., & Sladek, F. M. (2017). Omega-6 and omega-3 oxylipins are implicated in soybean oil-induced obesity in mice. *Scientific Reports*, *7*, 12488.

[59] Mercer, K. E., Pulliam, C. F., Pedersen, K. B., Hennings, L., & Ronis, M. J. (2017). Soy protein isolate inhibits hepatic tumor promotion in mice fed a high-fat liquid diet. *Experimental Biology and Medicine*, *242(*6), 635–644.

[60] Odle, B., Dennison, N., Al-Nakkash, L., Broderick, T. L., & Plochocki, J. H. (2017). Genistein treatment improves fracture resistance in obese diabetic mice. *BMC Endocrine Disorders*, *17(*1), 1.

[61] Lord, R., Fairbourn, N., Mylavarapu, C., Dbeis, A., Bowman, T., Chandrashekar, A., Banayat, T., Hodges, O. A., & Al-Nakkash, L. (2018). Consuming genistein improves survival rates in the absence of laxative in ΔF508-CF female mice. *Nutrients*, *10*(10), 1418.

[62] Huang, G., Xu, J., & Guo, T. L. (2019). Isoflavone daidzein regulates immune responses in the B6C3F1 and non-obese diabetic (NOD) mice. *International Immunopharmacology, 71*, 277–284.