

TSOD[®]系マウス を使用した論文リスト

* 2021年1月7日にPubMedで検索した資料の一部です。

* 本系統は日本エスエルシー株式会社経由でも提供されています。

マウス：近交系 肥満糖尿病モデル動物



TSOD[®]系マウス

- 特徴 ・2型糖尿病モデル動物(多因子遺伝性)
・メタボリックシンドロームのモデルとして漢方薬、機能性食品の開発に有用
・高週齢での肝癌発症率が高い
- 毛色 白
- 由来 2001年 株式会社ツムラ

TSNO[®]系マウス

- 特徴 TSOD[®]系マウスの対照動物
- 毛色 白
- 由来 2001年 株式会社ツムラ



- 01 Effect of inactivated *Bifidobacterium longum* intake on obese diabetes model mice (TSOD). Ben Othman M, Sakamoto K. *Food Res Int.* 2020 Mar;129:108792. doi: 10.1016/j.foodres.2019.108792.
- 02 Identifying pre-disease signals before metabolic syndrome in mice by dynamical network biomarkers. Koizumi K, Oku M, Hayashi S, Inujima A, Shibahara N, Chen L, Igarashi Y, Tobe K, Saito S, Kadowaki M, Aihara K. *Sci Rep.* 2019 Jun 24;9(1):8767. doi: 10.1038/s41598-019-45119-w.
- 03 Oral administration of an herbal medicine to prevent progressive hearing loss in a mouse model of diabetes. Hori T, Sugahara K, Tsuda J, Hirose Y, Hashimoto M, Takemoto Y, Tarumoto S, Yamashita H. *Auris Nasus Larynx.* 2019 Feb 21. pii: S0385-8146(18)30917-9. doi: 10.1016/j.anl.2019.01.011.
- 04 mTOR Activation in Liver Tumors Is Associated with Metabolic Syndrome and Non-Alcoholic Steatohepatitis in Both Mouse Models and Humans. Okuno T, Kakehashi A, Ishii N, Fujioka M, Gi M, Wanibuchi H. *Cancers (Basel).* 2018 Nov 22;10(12). pii: E465. doi: 10.3390/cancers10120465.
- 05 Effect of coffee or coffee components on gut microbiome and short-chain fatty acids in a mouse model of metabolic syndrome. Nishitsuji K, Watanabe S, Xiao J, Nagatomo R, Ogawa H, Tsunematsu T, Umemoto H, Morimoto Y, Akatsu H, Inoue K, Tsuneyama K. *Sci Rep.* 2018 Nov 1;8(1):16173. doi: 10.1038/s41598-018-34571-9.
- 06 Characteristics of bone strength and metabolism in type 2 diabetic model Tsumura, Suzuki, Obese Diabetes mice. Tanaka H, Yamashita T, Yoneda M, Takagi S, Miura T. *Bone Rep.* 2018 Jul 21;9:74-83. doi: 10.1016/j.bonr.2018.07.004.
- 07 Ashitaba (*Angelica Keiskei*) Exudate Prevents Increases in Plasminogen Activator Inhibitor-1 Induced by Obesity in Tsumura Suzuki Obese Diabetic Mice. Ohta M, Fujinami A, Oishi K, Kobayashi N, Ohnishi K, Ohkura N. *J Diet Suppl.* 2018 Apr 30:1-13. doi: 10.1080/19390211.2018.1458366.
- 08 Tsumura-Suzuki obese diabetic mice-derived hepatic tumors closely resemble human hepatocellular carcinomas in metabolism-related genes expression and bile acid accumulation. Takahashi T, Deuschle U, Taira S, Nishida T, Fujimoto M, Hijikata T, Tsuneyama K. *Hepatol Int.* 2018 May;12(3):254-261. doi: 10.1007/s12072-018-9860-3.
- 09 Analysis of the gut microbiome and plasma short-chain fatty acid profiles in a spontaneous mouse model of metabolic Syndrome. Nishitsuji K, Xiao J, Nagatomo R, Umemoto H, Morimoto Y, Akatsu H, Inoue K, Tsuneyama K. *Sci Rep.* 2017 Nov 20;7(1):15876. doi: 10.1038/s41598-017-16189-5.
- 04 4-Nitroquinoline 1-Oxide-Induced Tongue and Esophagus Carcinogenesis in Obese and Diabetic TSOD Mice. Tanaka T, Kawabata K, Sugie S. *World J Oncol.* 2017 Aug;8(4):97-104. doi: 10.14740/wjon1038w.

- 11 Animal models for analyzing metabolic syndrome-associated liver diseases. Tsuneyama K, Nishitsuji K, Matsumoto M, Kobayashi T, Morimoto Y, Tsunematsu T, Ogawa H. *Pathol Int.* 2017 Nov;67(11):539–546. doi: 10.1111/pin.12600. Review.
- 12 Comparative analysis of the intestinal flora in type 2 diabetes and nondiabetic mice. Horie M, Miura T, Hirakata S, Hosoyama A, Sugino S, Umeno A, Murotomi K, Yoshida Y, Koike T. *Exp Anim.* 2017 Oct 30;66(4):405–416. doi: 10.1538/expanim.17-0021.
- 13 Activation of PPAR γ at an Early Stage of Differentiation Enhances Adipocyte Differentiation of MEFs Derived from Type II Diabetic TSOD Mice and Alters Lipid Droplet Morphology. Ishibashi K, Takeda Y, Nakatani E, Sugawara K, Imai R, Sekiguchi M, Takahama R, Ohkura N, Atsumi GI. *Biol Pharm Bull.* 2017;40(6):852–859. doi: 10.1248/bpb.b17-00030.
- 14 Daily Coffee Intake Inhibits Pancreatic Beta Cell Damage and Nonalcoholic Steatohepatitis in a Mouse Model of Spontaneous Metabolic Syndrome, Tsumura–Suzuki Obese Diabetic Mice. Watanabe S, Takahashi T, Ogawa H, Uehara H, Tsunematsu T, Baba H, Morimoto Y, Tsuneyama K. *Metab Syndr Relat Disord.* 2017 May;15(4):170–177. doi: 10.1089/met.2016.0114.
- 15 Aged garlic extract suppresses the increase of plasma glycated albumin level and enhances the AMP-activated protein kinase in adipose tissue in TSOD mice. Miki S, Inokuma KI, Takashima M, Nishida M, Sasaki Y, Ushijima M, Suzuki JI, Morihara N. *Mol Nutr Food Res.* 2017 May;61(5). doi: 10.1002/mnfr.201600797.
- 16 Naringenin interferes with the anti-diabetic actions of pioglitazone via pharmacodynamic interactions. Yoshida H, Tshako R, Atsumi T, Narumi K, Watanabe W, Sugita C, Kurokawa M. *J Nat Med.* 2017 Apr;71(2):442–448. doi: 10.1007/s11418-016-1063-4.
- 17 Reduction and fragmentation of elastic fibers in the skin of obese mice is associated with altered mRNA expression levels of fibrillin-1 and neprilysin. Makihara H, Hidaka M, Sakai Y, Horie Y, Mitsui H, Ohashi K, Goshima Y, Akase T. *Connect Tissue Res.* 2017 Sep;58(5):479–486. doi: 10.1080/03008207.2016.1255205.
- 18 Aberrant iron metabolism might have an impact on progression of diseases in Tsumura Suzuki obese diabetes mice, a model of spontaneous metabolic syndrome. Nishida T, Tsuneyama K, Fujimoto M, Nomoto K, Hayashi S, Miwa S, Nakajima T, Nakanishi Y, Hatta H, Imura J. *Pathol Int.* 2016 Nov;66(11):622–628. doi: 10.1111/pin.12466.
- 19 Efficacy of *Kaempferia parviflora* in a mouse model of obesity-induced dermatopathy. Hidaka M, Horikawa K, Akase T, Makihara H, Ogami T, Tomozawa H, Tsubata M, Ibuki A, Matsumoto Y. *J Nat Med.* 2017 Jan;71(1):59–67. doi: 10.1007/s11418-016-1027-8.
- 20 Histopathological characteristics of glutamine synthetase-positive hepatic tumor lesions in a mouse model of spontaneous metabolic syndrome (TSOD mouse). Takahashi T, Nishida T, Baba H, Hatta H, Imura J, Sutoh M, Toyohara S, Hokao R, Watanabe S, Ogawa H, Uehara H, Tsuneyama K. *Mol Clin Oncol.* 2016 Aug;5(2):267–270.
- 21 A study of hearing function and histopathologic changes in the cochlea of the type 2 diabetes model Tsumura Suzuki obese diabetes mouse. Tsuda J, Sugahara K, Hori T, Kanagawa E, Takaki E, Fujimoto M, Nakai A, Yamashita H. *Acta Otolaryngol.* 2016 Nov;136(11):1097–1106.
- 22 Involvement of splenic iron accumulation in the development of nonalcoholic steatohepatitis in Tsumura Suzuki Obese Diabetes mice. Murotomi K, Arai S, Uchida S, Endo S, Mitsuzumi H, Tabei Y, Yoshida Y, Nakajima Y. *Sci Rep.* 2016 Mar 2;6:22476. doi: 10.1038/srep22476.
- 23 Effects of ethyl acetate extract of *Kaempferia parviflora* on brown adipose tissue. Kobayashi H, Horiguchi–Babamoto E, Suzuki M, Makihara H, Tomozawa H, Tsubata M, Shimada T, Sugiyama K, Aburada M. *J Nat Med.* 2016 Jan;70(1):54–61. doi: 10.1007/s11418-015-0936-2.
- 24 Oleuropein-Rich Diet Attenuates Hyperglycemia and Impaired Glucose Tolerance in Type 2 Diabetes Model Mouse. Murotomi K, Umeno A, Yasunaga M, Shichiri M, Ishida N, Koike T, Matsuo T, Abe H, Yoshida Y, Nakajima Y. *J Agric Food Chem.* 2015 Aug 5;63(30):6715–22. doi: 10.1021/acs.jafc.5b00556.
- 25 Type 2 diabetes model TSOD mouse is exposed to oxidative stress at young age. Murotomi K, Umeno A, Yasunaga M, Shichiri M, Ishida N, Abe H, Yoshida Y, Nakajima Y. *J Clin Biochem Nutr.* 2014 Nov;55(3):216–20. doi: 10.3164/jcbrn.14-73.

- 26 Switching from singlet-oxygen-mediated oxidation to free-radical-mediated oxidation in the pathogenesis of type 2 diabetes in model mouse. Murotomi K, Umeno A, Yasunaga M, Shichiri M, Ishida N, Abe H, Yoshida Y, Nakajima Y. *Free Radic Res.* 2015 Feb;49(2):133-8. doi: 10.3109/10715762.2014.985218.
- 27 *Salacia reticulata* has therapeutic effects on obesity. Shimada T, Nakayama Y, Harasawa Y, Matsui H, Kobayashi H, Sai Y, Miyamoto K, Tomatsu S, Aburada M. *J Nat Med.* 2014 Oct;68(4):668-76. doi: 10.1007/s11418-014-0845-9.
- 28 Suppression of adipocyte hypertrophy by polymethoxyflavonoids isolated from *Kaempferia parviflora*. Okabe Y, Shimada T, Horikawa T, Kinoshita K, Koyama K, Ichinose K, Aburada M, Takahashi K. *Phytomedicine.* 2014 May 15;21(6):800-6. doi: 10.1016/j.phymed.2014.01.014.
- 29 Autoimmune features in metabolic liver disease: a single-center experience and review of the literature. Tsuneyama K, Baba H, Kikuchi K, Nishida T, Nomoto K, Hayashi S, Miwa S, Nakajima T, Nakanishi Y, Masuda S, Terada M, Imura J, Selmi C. *Clin Rev Allergy Immunol.* 2013 Aug;45(1):143-8. doi: 10.1007/s12016-013-8383-x. Review.
- 30 Pentraxin 3 production in the adipose tissue and the skeletal muscle in diabetic-obese mice. Miyaki A, Choi Y, Maeda S. *Am J Med Sci.* 2014 Mar;347(3):228-33. doi: 10.1097/MAJ.0b013e31828341af.
- 31 Spontaneous onset of nonalcoholic steatohepatitis and hepatocellular carcinoma in a mouse model of metabolic syndrome. Nishida T, Tsuneyama K, Fujimoto M, Nomoto K, Hayashi S, Miwa S, Nakajima T, Nakanishi Y, Sasaki Y, Suzuki W, Iizuka S, Nagata M, Shimada T, Aburada M, Shimada Y, Imura J. *Lab Invest.* 2013 Feb;93(2):230-41. doi: 10.1038/labinvest.2012.155.
- 32 Possible involvement of hypothalamic nucleobindin-2 in hyperphagic feeding in Tsumura Suzuki obese diabetes mice. Miyata S, Yamada N, Kawada T. *Biol Pharm Bull.* 2012;35(10):1784-93.
- 33 *Puerariae flos* alleviates metabolic diseases in Western diet-loaded, spontaneously obese type 2 diabetic model mice. Kubo K, Shimada T, Onishi R, Tsubata M, Kamiya T, Nagamine R, Iizuka S, Sai Y, Amagaya S, Aburada M, Miyamoto K. *J Nat Med.* 2012 Oct;66(4):622-30. doi: 10.1007/s11418-012-0629-z.
- 34 Flavangenol (pine bark extract) and its major component procyanidin B1 enhance fatty acid oxidation in fat-loaded models. Shimada T, Tokuhara D, Tsubata M, Kamiya T, Kamiya-Sameshima M, Nagamine R, Takagaki K, Sai Y, Miyamoto K, Aburada M. *Eur J Pharmacol.* 2012 Feb 29;677(1-3):147-53. doi: 10.1016/j.ejphar.2011.12.034.
- 35 Skin fragility in obese diabetic mice: possible involvement of elevated oxidative stress and upregulation of matrix metalloproteinases. Ibuki A, Akase T, Nagase T, Minematsu T, Nakagami G, Horii M, Sagara H, Komeda T, Kobayashi M, Shimada T, Aburada M, Yoshimura K, Sugama J, Sanada H. *Exp Dermatol.* 2012 Mar;21(3):178-83. doi: 10.1111/j.1600-0625.2011.01409.x.
- 36 Prevention of Adiposity by the Oral Administration of β -Cryptoxanthin. Takayanagi K. *Front Neurol.* 2011 Nov 23;2:67. doi: 10.3389/fneur.2011.00067.
- 37 Preventive effect of *Terminalia bellirica* on obesity and metabolic disorders in spontaneously obese type 2 diabetic model Mice. Makihara H, Shimada T, Machida E, Oota M, Nagamine R, Tsubata M, Kinoshita K, Takahashi K, Aburada M. *J Nat Med.* 2012 Jul;66(3):459-67. doi: 10.1007/s11418-011-0606-y.
- 38 Mechanism of visceral fat reduction in Tsumura Suzuki obese, diabetes (TSOD) mice orally administered β -cryptoxanthin from Satsuma mandarin oranges (*Citrus unshiu* Marc). Takayanagi K, Morimoto S, Shirakura Y, Mukai K, Sugiyama T, Tokuji Y, Ohnishi M. *J Agric Food Chem.* 2011 Dec 14;59(23):12342-51. doi: 10.1021/jf202821u.
- 39 Protective and ameliorative effects of maté (*Ilex paraguariensis*) on metabolic syndrome in TSOD mice. Hussein GM, Matsuda H, Nakamura S, Akiyama T, Tamura K, Yoshikawa M. *Phytomedicine.* 2011 Dec 15;19(1):88-97. doi: 10.1016/j.phymed.2011.06.036.
- 40 Preventive effect of geniposide on metabolic disease status in spontaneously obese type 2 diabetic mice and free fatty acid-treated HepG2 cells. Kojima K, Shimada T, Nagareda Y, Watanabe M, Ishizaki J, Sai Y, Miyamoto K, Aburada M. *Biol Pharm Bull.* 2011;34(10):1613-8.

- 41 Anti-obesity effects of the methanolic extract and chakasaponins from the flower buds of *Camellia sinensis* in mice. Hamao M, Matsuda H, Nakamura S, Nakashima S, Semura S, Maekubo S, Wakasugi S, Yoshikawa M. *Bioorg Med Chem*. 2011 Oct 15;19(20):6033-41. doi: 10.1016/j.bmc.2011.08.042.
- 42 Preventive effect of *Kaempferia parviflora* ethyl acetate extract and its major components polymethoxyflavonoid on metabolic diseases. Shimada T, Horikawa T, Ikeya Y, Matsuo H, Kinoshita K, Taguchi T, Ichinose K, Takahashi K, Aburada M. *Fitoterapia*. 2011 Dec;82(8):1272-8. doi: 10.1016/j.fitote.2011.08.018.
- 43 Preventive effect of pine bark extract (flavangenol) on metabolic disease in Western diet-loaded tsumura suzuki obese diabetes mice. Shimada T, Kosugi M, Tokuhara D, Tsubata M, Kamiya T, Sameshima M, Nagamine R, Takagaki K, Miyamoto K, Aburada M. *Evid Based Complement Alternat Med*. 2011;2011:185913. doi: 10.1093/ecam/nep231.
- 44 Aging-like skin changes induced by ultraviolet irradiation in an animal model of metabolic syndrome. Akase T, Nagase T, Huang L, Ibuki A, Minematsu T, Nakagami G, Ohta Y, Shimada T, Aburada M, Sugama J, Sanada H. *Biol Res Nurs*. 2012 Apr;14(2):180-7. doi: 10.1177/1099800411401013.
- 45 Antiobesity effects of *Kaempferia parviflora* in spontaneously obese type II diabetic mice. Akase T, Shimada T, Terabayashi S, Ikeya Y, Sanada H, Aburada M. *J Nat Med*. 2011 Jan;65(1):73-80. doi: 10.1007/s11418-010-0461-2.
- 46 A study of cardiovascular function in Tsumura Suzuki obese diabetes, a new model mouse of type 2 diabetes. Kawada T, Miyata S, Shimada T, Sanzen Y, Ito M, Hemmi C, Iizuka S, Suzuki W, Mihara K, Aburada M, Nakazawa M. *Biol Pharm Bull*. 2010;33(6):998-1003.
- 47 Metabolic disease prevention and suppression of fat accumulation by *Salacia reticulata*. Shimada T, Nagai E, Harasawa Y, Akase T, Aburada M, Iizuka S, Miyamoto K, Aburada M. *J Nat Med*. 2010 Jul;64(3):266-74. doi: 10.1007/s11418-010-0401-1.
- 48 Differences in the pharmacokinetics of Cyp3a substrates in TSOD and streptozotocin-induced diabetic mice. Kudo T, Toda T, Ushiki T, Ohi K, Ikarashi N, Ochiai W, Sugiyama K. *Xenobiotica*. 2010 Apr;40(4):282-90. doi: 10.3109/00498251003596809.
- 49 Altered expression of CYP in TSOD mice: a model of type 2 diabetes and obesity. Kudo T, Shimada T, Toda T, Igeta S, Suzuki W, Ikarashi N, Ochiai W, Ito K, Aburada M, Sugiyama K. *Xenobiotica*. 2009 Dec;39(12):889-902. doi: 10.3109/00498250903242592.
- 50 Preventive Effects of *Salacia reticulata* on Obesity and Metabolic Disorders in TSOD Mice. Akase T, Shimada T, Harasawa Y, Akase T, Ikeya Y, Nagai E, Iizuka S, Nakagami G, Iizaka S, Sanada H, Aburada M. *Evid Based Complement Alternat Med*. 2011;2011:484590. doi: 10.1093/ecam/nep052.
- 51 Preventive Effect of *Boiogito* on Metabolic Disorders in the TSOD Mouse, a Model of Spontaneous Obese Type II Diabetes Mellitus. Shimada T, Akase T, Kosugi M, Aburada M. *Evid Based Complement Alternat Med*. 2011;2011:931073. doi: 10.1093/ecam/nep012.
- 52 Preventive effects of *Bofutsushosan* on obesity and various metabolic disorders. Shimada T, Kudo T, Akase T, Aburada M. *Biol Pharm Bull*. 2008 Jul;31(7):1362-7.
- 53 Insulin resistance and low sympathetic nerve activity in the Tsumura Suzuki obese diabetic mouse: a new model of spontaneous type 2 diabetes mellitus and obesity. Takahashi A, Tabuchi M, Suzuki W, Iizuka S, Nagata M, Ikeya Y, Takeda S, Shimada T, Aburada M. *Metabolism*. 2006 Dec;55(12):1664-9.
- 54 Chromosome 2 locus *Nidd5* has a potent effect on adiposity in the TSOD mouse. Mizutani S, Gomi H, Hirayama I, Izumi T. *Mamm Genome*. 2006 May;17(5):375-84.
- 55 Diabetic complications in a new animal model (TSOD mouse) of spontaneous NIDDM with obesity. Iizuka S, Suzuki W, Tabuchi M, Nagata M, Imamura S, Kobayashi Y, Kanitani M, Yanagisawa T, Kase Y, Takeda S, Aburada M, Takahashi KW. *Exp Anim*. 2005 Jan;54(1):71-83.
- 56 Impairment of insulin-stimulated GLUT4 translocation in skeletal muscle and adipose tissue in the Tsumura Suzuki obese diabetic mouse: a new genetic animal model of type 2 diabetes. Miura T, Suzuki W, Ishihara E, Arai I, Ishida H, Seino Y, Tanigawa K.

Eur J Endocrinol. 2001 Dec;145(6):785-90.

57 A new mouse model of spontaneous diabetes derived from ddY strain. Suzuki W, Iizuka S, Tabuchi M, Funo S, Yanagisawa T, Kimura M, Sato T, Endo T, Kawamura H. Exp Anim. 1999 Jul;48(3):181-9.

58 Genetic analysis of obese diabetes in the TSOD mouse. Hirayama I, Yi Z, Izumi S, Arai I, Suzuki W, Nagamachi Y, Kuwano H, Takeuchi T, Izumi T. Diabetes. 1999 May;48(5):1183-91.

	一般財団法人 動物繁殖研究所	〒300-0134 茨城県かすみがうら市深谷 1103 電話：029-897-0631 FAX：029-897-0633 ホームページ：http://www.iar.or.jp/	
---	-------------------	---	---