

## db系マウスを使用した論文リスト

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### マウス：近交系 肥満糖尿病モデル動物



#### db系マウス C57BLKS/J Iar-+/Lepr<sup>db</sup>/+Lepr<sup>db</sup>

- 特徴 ・2型糖尿病モデル動物 (単一遺伝子性)  
・肥満、糖尿病の基礎的研究や治療薬の開発に有用
- 毛色 黒
- 由来 1985年 浜松医科大学

#### C57BLKS/J Iar-m+/+Lepr<sup>db</sup>

- 特徴 db系マウスのヘテロ対照動物
- 毛色 黒
- 由来 1985年 浜松医科大学

#### C57BLKS/J Iar-m+/m+

- 特徴 db系マウスのミスティ対照動物
- 毛色 灰色
- 由来 1985年 浜松医科大学



- 01 Mouse model of metformin-induced diarrhea. Takemori H, Hamamoto A, Isogawa K, Ito M, Takagi M, Morino H, Miura T, Oshida K, Shibata T. *BMJ Open Diabetes Res Care*. 2020 Mar;8(1):e000898. doi: 10.1136/bmjdr-2019-000898.
- 02 Klotho protein supplementation reduces blood pressure and renal hypertrophy in db/db mice, a model of type 2 diabetes. Takenaka T, Kobori H, Miyazaki T, Suzuki H, Nishiyama A, Ishii N, Yamashita M, Hayashi M. *Acta Physiol (Oxf)*. 2019 Feb;225(2):e13190. doi: 10.1111/apha.13190.
- 03 Aberrant DNA methylation of Tgfb1 in diabetic kidney mesangial cells. Oba S, Ayuzawa N, Nishimoto M, Kawarazaki W, Ueda K, Hirohama D, Kawakami-Mori F, Shimozawa T, Marumo T, Fujita T. *Sci Rep*. 2018 Nov 5;8(1):16338. doi: 10.1038/s41598-018-34612-3.
- 04 A Dipeptidyl Peptidase-4 Inhibitor Suppresses Macrophage Foam Cell Formation in Diabetic db/db Mice and Type 2 Diabetes Patients. Terasaki M, Hiromura M, Mori Y, Kohashi K, Kushima H, Koshibu M, Saito T, Yashima H, Watanabe T, Hirano T. *Int J Endocrinol*. 2018 Dec 9;2018:8458304. doi: 10.1155/2018/8458304.
- 05 Impacts of Diabetes and an SGLT2 Inhibitor on the Glomerular Number and Volume in db/db Mice, as Estimated by Synchrotron Radiation Micro-CT at SPring-8. Takiyama Y, Sera T, Nakamura M, Ishizeki K, Saijo Y, Yanagimachi T, Maeda M, Besho R, Takiyama T, Kitsunai H, Sakagami H, Fujishiro D, Fujita Y, Makino Y, Abiko A, Hoshino M, Uesugi K, Yagi N, Ota T, Haneda M. *EBioMedicine*. 2018 Oct;36:329-346. doi: 10.1016/j.ebiom.2018.09.048.
- 06 Therapeutic effects of the allosteric protein tyrosine phosphatase 1B inhibitor KY-226 on experimental diabetes and obesity via enhancements in insulin and leptin signaling in mice. Ito Y, Fukui M, Kanda M, Morishita K, Shoji Y, Kitao T, Hinoi E, Shirahase H. *J Pharmacol Sci*. 2018 May;137(1):38-46. doi: 10.1016/j.jphs.2018.03.001.
- 07 Leptin induces SIRT1 expression through activation of NF-E2-related factor 2: Implications for obesity-associated colon carcinogenesis. Song NY, Lee YH, Na HK, Baek JH, Surh YJ. *Biochem Pharmacol*. 2018 Jul;153:282-291. doi: 10.1016/j.bcp.2018.02.001.
- 08 Orally active, species-independent novel A3 adenosine receptor antagonist protects against kidney injury in db/db mice. Dorotea D, Cho A, Lee G, Kwon G, Lee J, Sahu PK, Jeong LS, Cha DR, Ha H. *Exp Mol Med*. 2018 Apr 20;50(4):38. doi: 10.1038/s12276-018-0053-x.
- 09 Antihyperglycemic and Antilipidemic Effects of the Ethanol Extract Mixture of *Ligularia fischeri* and *Momordica charantia* in Type II Diabetes-Mimicking Mice. Baek HJ, Jeong YJ, Kwon JE, Ra JS, Lee SR, Kang SC. *Evid Based Complement Alternat Med*. 2018 Oct 2;2018:3468040. doi: 10.1155/2018/3468040.
- 10 Novel Non-carboxylate Benzoylsulfonamide-Based Protein Tyrosine Phosphatase 1B Inhibitors with Non-competitive Actions. Morishita K, Shoji Y, Tanaka S, Fukui M, Ito Y, Kitao T, Ozawa SI, Hirono S, Shirahase H. *Chem Pharm Bull (Tokyo)*. 2017;65(12):1144-1160. doi: 10.1248/cpb.c17-00635.
- 11 Preventive Effects of Pentoxifylline on the Development of Colonic Premalignant Lesions in Obese and Diabetic Mice. Fukuta K, Shirakami Y, Maruta

- A, Obara K, Iritani S, Nakamura N, Kochi T, Kubota M, Sakai H, Tanaka T, Shimizu M. *Int J Mol Sci.* 2017 Feb 15;18(2). pii: E413. doi: 10.3390/ijms18020413.
- 12 Therapeutic properties of *Scutellaria baicalensis* in db/db mice evaluated using Connectivity Map and network pharmacology. Kim BY, Song KH, Lim CY, Cho SI. *Sci Rep.* 2017 Jan 31;7:41711. doi: 10.1038/srep41711.
  - 13 Physiological characterization of a novel PPAR pan agonist, 2-(4-(5,6-methylenedioxybenzo[d]thiazol-2-yl)-2-methylphenoxy)-2-methylpropanoic acid (MHY2013). An HJ, Lee B, Kim DH, Lee EK, Chung KW, Park MH, Jeong HO, Kim SM, Moon KM, Kim YR, Kim SJ, Yun HY, Chun P, Yu BP, Moon HR, Chung HY. *Oncotarget.* 2017 Mar 7;8(10):16912-16924. doi: 10.18632/oncotarget.14818.
  - 14 Fermentation of purple Jerusalem artichoke extract to improve the  $\alpha$ -glucosidase inhibitory effect in vitro and ameliorate blood glucose in db/db mice. Wang Z, Hwang SH, Lee SY, Lim SS. *Nutr Res Pract.* 2016 Jun;10(3):282-7. doi: 10.4162/nrp.2016.10.3.282.
  - 15 BNIP3 is essential for mitochondrial bioenergetics during adipocyte remodelling in mice. Choi JW, Jo A, Kim M, Park HS, Chung SS, Kang S, Park KS. *Diabetologia.* 2016 Mar;59(3):571-81. doi: 10.1007/s00125-015-3836-9.
  - 16 *Gynura procumbens* extract improves insulin sensitivity and suppresses hepatic gluconeogenesis in C57BL/KsJ-db/db mice. Choi SI, Lee HA, Han JS. *Nutr Res Pract.* 2016 Oct;10(5):507-515.
  - 17 Caloric restriction of db/db mice reverts hepatic steatosis and body weight with divergent hepatic metabolism. Kim KE, Jung Y, Min S, Nam M, Heo RW, Jeon BT, Song DH, Yi CO, Jeong EA, Kim H, Kim J, Jeong SY, Kwak W, Ryu do H, Horvath TL, Roh GS, Hwang GS. *Sci Rep.* 2016 Jul 21;6:30111. doi: 10.1038/srep30111.
  - 18 Jicama (*Pachyrhizus erosus*) extract increases insulin sensitivity and regulates hepatic glucose in C57BL/KsJ-db/db mice. Park CJ, Lee HA, Han JS. *J Clin Biochem Nutr.* 2016 Jan;58(1):56-63. doi: 10.3164/jcbn.15-59.
  - 19 Metformin suppresses diethylnitrosamine-induced liver tumorigenesis in obese and diabetic C57BL/KsJ-Leprdb/+Leprdb mice. Ohno T, Shimizu M, Shirakami Y, Baba A, Kochi T, Kubota M, Tsurumi H, Tanaka T, Moriwaki H. *PLoS One.* 2015 Apr 16;10(4):e0124081. doi: 10.1371/journal.pone.0124081.
  - 20 Autophagic adaptations in diabetic cardiomyopathy differ between type 1 and type 2 diabetes. Kanamori H, Takemura G, Goto K, Tsujimoto A, Mikami A, Ogino A, Watanabe T, Morishita K, Okada H, Kawasaki M, Seishima M, Minatoguchi S. *Autophagy.* 2015;11(7):1146-60. doi: 10.1080/15548627.2015.1051295.
  - 21 Anti-diabetic effect of purple corn extract on C57BL/KsJ db/db mice. Huang B, Wang Z, Park JH, Ryu OH, Choi MK, Lee JY, Kang YH, Lim SS. *Nutr Res Pract.* 2015 Feb;9(1):22-9. doi: 10.4162/nrp.2015.9.1.22.
  - 22 Design, synthesis, and biological evaluation of a series of alkoxy-3-indolylacetic acids as peroxisome proliferator-activated receptor  $\gamma/\delta$  agonists. Gim HJ, Li H, Jeong JH, Lee SJ, Sung MK, Song MY, Park BH, Oh SJ, Ryu JH, Jeon R. *Bioorg Med Chem.* 2015 Jul 1;23(13):3322-36. doi: 10.1016/j.bmc.2015.04.046.
  - 23 Soy Leaf Extract Containing Kaempferol Glycosides and Pheophorbides Improves Glucose Homeostasis by Enhancing Pancreatic  $\beta$ -Cell Function and Suppressing Hepatic Lipid Accumulation in db/db Mice. Li H, Ji HS, Kang JH, Shin DH, Park HY, Choi M, Lee CH, Lee IK, Yun BS, Jeong TS. *J Agric Food Chem.* 2015 Aug 19;63(32):7198-210. doi: 10.1021/acs.jafc.5b01639.
  - 24 *Cudrania tricuspidata* water extract improved obesity-induced hepatic insulin resistance in db/db mice by suppressing ER stress and inflammation. Kim OK, Nam DE, Jun W, Lee J. *Food Nutr Res.* 2015 Oct 26;59:29165. doi: 10.3402/fnr.v59.29165.
  - 25 *Caulerpa lentillifera* extract ameliorates insulin resistance and regulates glucose metabolism in C57BL/KsJ-db/db mice via PI3K/AKT signaling pathway in myocytes. Sharma BR, Kim HJ, Rhyu DY. *J Transl Med.* 2015 Feb 15;13:62. doi: 10.1186/s12967-015-0412-5.
  - 26 *Litsea japonica* extract inhibits neuronal apoptosis and the accumulation of advanced glycation end products in the diabetic mouse retina. Kim J, Kim CS, Lee YM, Sohn E, Jo K, Kim JS. *Mol Med Rep.* 2015 Jul;12(1):1075-81. doi: 10.3892/mmr.2015.3543.
  - 27 *Litsea japonica* Extract Inhibits Aldose Reductase Activity and Hyperglycemia-Induced Lenticular Sorbitol Accumulation in db/db Mice. Kim J, Kim CS, Sohn E, Lee YM, Jo K, Kim JS. *Evid Based Complement Alternat Med.* 2015;2015:747830. doi: 10.1155/2015/747830.
  - 28 Gemigliptin, a dipeptidyl peptidase-4 inhibitor, inhibits retinal pericyte injury in db/db mice and retinal neovascularization in mice with

- ischemic retinopathy. Jung E, Kim J, Kim CS, Kim SH, Cho MH. *Biochim Biophys Acta*. 2015 Dec;1852(12):2618–29. doi: 10.1016/j.bbdis.2015.09.010.
- 29 Adipose gene expression profiles related to metabolic syndrome using microarray analyses in two different models. Yoo HJ, Hwang HJ, Jung TW, Ryu JY, Hong HC, Choi HY, Baik SH, Choi KM. *Diabetes Metab J*. 2014 Oct;38(5):356–65. doi: 10.4093/dmj.2014.38.5.356.
- 30 Inhibitory effects of astaxanthin on azoxymethane-induced colonic preneoplastic lesions in C57/BL/KsJ-db/db mice. Kochi T, Shimizu M, Sumi T, Kubota M, Shirakami Y, Tanaka T, Moriwaki H. *BMC Gastroenterol*. 2014 Dec 17;14:212. doi: 10.1186/s12876-014-0212-z.
- 31 Thymosin beta 4 improves dermal burn wound healing via downregulation of receptor of advanced glycation end products in db/db mice. Kim S, Kwon J. *Biochim Biophys Acta*. 2014 Dec;1840(12):3452–9. doi: 10.1016/j.bbagen.2014.09.013.
- 32 Extract of *Litsea japonica* ameliorates blood-retinal barrier breakdown in db/db mice. Kim J, Kim CS, Lee IS, Lee YM, Sohn E, Jo K, Kim JH, Kim JS. *Endocrine*. 2014 Aug;46(3):462–9. doi: 10.1007/s12020-013-0085-x.
- 33 Gemigliptin, a novel dipeptidyl peptidase-4 inhibitor, exhibits potent anti-glycation properties in vitro and in vivo. Jung E, Kim J, Kim SH, Kim S, Cho MH. *Eur J Pharmacol*. 2014 Dec 5;744:98–102. doi: 10.1016/j.ejphar.2014.10.008.
- 34 *Dioscorea* Extract (DA-9801) Modulates Markers of Peripheral Neuropathy in Type 2 Diabetic db/db Mice. Moon E, Lee SO, Kang TH, Kim HJ, Choi SZ, Son MW, Kim SY. *Biomol Ther (Seoul)*. 2014 Sep;22(5):445–52. doi: 10.4062/biomolther.2014.051.
- 35 Inhibition of p53 preserves Parkin-mediated mitophagy and pancreatic  $\beta$ -cell function in diabetes. Hoshino A, Ariyoshi M, Okawa Y, Kaimoto S, Uchihashi M, Fukai K, Iwai-Kanai E, Ikeda K, Ueyama T, Ogata T, Matoba S. *Proc Natl Acad Sci U S A*. 2014 Feb 25;111(8):3116–21. doi: 10.1073/pnas.1318951111.
- 36 Expression of heat shock protein 90 in the kidneys of diabetic db/db mice. Kim YS, Sohn E, Jung DH, Lee YM, Kim CS, Kim J, Kim JS. *Eur Rev Med Pharmacol Sci*. 2014;18(15):2198–204.
- 37 Inhibition of the TNF- $\alpha$ -induced serine phosphorylation of IRS-1 at 636/639 by AICAR. Shibata T, Takaguri A, Ichihara K, Satoh K. *J Pharmacol Sci*. 2013;122(2):93–102.
- 38 Lotus leaf alleviates hyperglycemia and dyslipidemia in animal model of diabetes mellitus. Kim AR, Jeong SM, Kang MJ, Jang YH, Choi HN, Kim JI. *Nutr Res Pract*. 2013 Jun;7(3):166–71. doi: 10.4162/nrp.2013.7.3.166.
- 39 Extracts of *Scutellaria baicalensis* reduced body weight and blood triglyceride in db/db Mice. Song KH, Lee SH, Kim BY, Park AY, Kim JY. *Phytother Res*. 2013 Feb;27(2):244–50. doi: 10.1002/ptr.4691.
- 40 Proteomic and bioinformatic analysis of membrane proteome in type 2 diabetic mouse liver. Kim GH, Park EC, Yun SH, Hong Y, Lee DG, Shin EY, Jung J, Kim YH, Lee KB, Jang IS, Lee ZW, Chung YH, Choi JS, Cheong C, Kim S, Kim SI. *Proteomics*. 2013 Apr;13(7):1164–79. doi: 10.1002/pmic.201200210.
- 41 The Extract of *Litsea japonica* Reduced the Development of Diabetic Nephropathy via the Inhibition of Advanced Glycation End Products Accumulation in db/db Mice. Sohn E, Kim J, Kim CS, Lee YM, Jo K, Shin SD, Kim JH, Kim JS. *Evid Based Complement Alternat Med*. 2013;2013:769416. doi: 10.1155/2013/769416.
- 42 Anti-hyperlipidemic effect of soybean extract fermented by *Bacillus subtilis* MORI in db/db mice. Nam Y, Jung H, Karuppasamy S, Lee JY, Kang KD, Hwang KY, Seong SI, Suh JG. *Lab Anim Res*. 2012 Jun;28(2):123–9. doi: 10.5625/lar.2012.28.2.123.
- 43 Silk fibroin hydrolysate exerts an anti-diabetic effect by increasing pancreatic  $\beta$  cell mass in C57BL/KsJ-db/db mice. Do SG, Park JH, Nam H, Kim JB, Lee JY, Oh YS, Suh JG. *J Vet Sci*. 2012 Dec;13(4):339–44.
- 44 The effects of designed angiotensin-1 variant on lipid droplet diameter, vascular endothelial cell density and metabolic parameters in diabetic db/db mice. Jung YJ, Choi HJ, Lee JE, Lee AS, Kang KP, Lee S, Park SK, Park TS, Jin HY, Lee SY, Kim DH, Kim W. *Biochem Biophys Res Commun*. 2012 Apr 13;420(3):498–504. doi: 10.1016/j.bbrc.2012.03.019.
- 45 Analysis of the endoplasmic reticulum subproteome in the livers of type 2 diabetic mice. Park EC, Kim GH, Yun SH, Lim HL, Hong Y, Kwon SO, Kwon J, Chung YH, Kim SI. *Int J Mol Sci*. 2012 Dec 17;13(12):17230–43. doi: 10.3390/ijms131217230.
- 46 Preventive effects of (-)-epigallocatechin gallate on diethylnitrosamine-induced liver tumorigenesis in obese and diabetic C57BL/KsJ-db/db Mice. Shimizu M, Sakai H, Shirakami Y, Yasuda Y, Kubota M, Terakura D, Baba A, Ohno T, Hara Y, Tanaka T, Moriwaki H. *Cancer Prev Res (Phila)*. 2011

Mar;4(3):396-403. doi: 10.1158/1940-6207.CAPR-10-0331.

- 47 Pitavastatin suppresses diethylnitrosamine-induced liver preneoplasms in male C57BL/KsJ-db/db obese mice. Shimizu M, Yasuda Y, Sakai H, Kubota M, Terakura D, Baba A, Ohno T, Kochi T, Tsurumi H, Tanaka T, Moriwaki H. *BMC Cancer*. 2011 Jun 28;11:281. doi: 10.1186/1471-2407-11-281.
- 48 Acyclic retinoid inhibits diethylnitrosamine-induced liver tumorigenesis in obese and diabetic C57BLKS/J-+(db)/+Lepr(db) mice. Shimizu M, Sakai H, Shirakami Y, Iwasa J, Yasuda Y, Kubota M, Takai K, Tsurumi H, Tanaka T, Moriwaki H. *Cancer Prev Res (Phila)*. 2011 Jan;4(1):128-36. doi: 10.1158/1940-6207.CAPR-10-0163.
- 49 Acid sphingomyelinase regulates glucose and lipid metabolism in hepatocytes through AKT activation and AMP-activated protein kinase suppression. Osawa Y, Seki E, Kodama Y, Suetsugu A, Miura K, Adachi M, Ito H, Shiratori Y, Banno Y, Olefsky JM, Nagaki M, Moriwaki H, Brenner DA, Seishima M. *FASEB J*. 2011 Apr;25(4):1133-44. doi: 10.1096/fj.10-168351.
- 50 Quercetin attenuates fasting and postprandial hyperglycemia in animal models of diabetes mellitus. Kim JH, Kang MJ, Choi HN, Jeong SM, Lee YM, Kim JI. *Nutr Res Pract*. 2011 Apr;5(2):107-11. doi: 10.4162/nrp.2011.5.2.107.
- 51 C57BL/KsJ-db/db-Apc mice exhibit an increased incidence of intestinal neoplasms. Hata K, Kubota M, Shimizu M, Moriwaki H, Kuno T, Tanaka T, Hara A, Hirose Y. *Int J Mol Sci*. 2011;12(11):8133-45. doi: 10.3390/ijms12118133.
- 52 Pitavastatin suppresses diethylnitrosamine-induced liver preneoplasms in male C57BL/KsJ-db/db obese mice. Shimizu M, Yasuda Y, Sakai H, Kubota M, Terakura D, Baba A, Ohno T, Kochi T, Tsurumi H, Tanaka T, Moriwaki H. *BMC Cancer*. 2011; 11: 281.
- 53 Pitavastatin inhibits azoxymethane-induced colonic preneoplastic lesions in C57BL/KsJ-db/db obese mice. Yasuda Y, Shimizu M, Shirakami Y, Sakai H, Kubota M, Hata K, Hirose Y, Tsurumi H, Tanaka T, Moriwaki H. *Cancer Sci*. 2010 Jul;101(7):1701-7. doi: 10.1111/j.1349-7006.2010.01579.x.
- 54 Dietary supplementation with branched-chain amino acids suppresses diethylnitrosamine-induced liver tumorigenesis in obese and diabetic C57BL/KsJ-db/db mice. Iwasa J, Shimizu M, Shiraki M, Shirakami Y, Sakai H, Terakura Y, Takai K, Tsurumi H, Tanaka T, Moriwaki H. *Cancer Sci*. 2010 Feb;101(2):460-7. doi: 10.1111/j.1349-7006.2009.01402.x.
- 55 Hypoglycemic effects of Welsh onion in an animal model of diabetes mellitus. Kang MJ, Kim JH, Choi HN, Kim MJ, Han JH, Lee JH, Kim JI. *Nutr Res Pract*. 2010 Dec;4(6):486-91. doi: 10.4162/nrp.2010.4.6.486.
- 56 Supplementation with branched-chain amino acids inhibits azoxymethane-induced colonic preneoplastic lesions in male C57BL/KsJ-db/db mice. Shimizu M, Shirakami Y, Iwasa J, Shiraki M, Yasuda Y, Hata K, Hirose Y, Tsurumi H, Tanaka T, Moriwaki H. *Clin Cancer Res*. 2009 May 1;15(9):3068-75. doi: 10.1158/1078-0432.CCR-08-2093.
- 57 Lysophosphatidylserine regulates blood glucose by enhancing glucose transport in myotubes and adipocytes. Yea K, Kim J, Lim S, Kwon T, Park HS, Park KS, Suh PG, Ryu SH. *Biochem Biophys Res Commun*. 2009 Jan 23;378(4):783-8. doi: 10.1016/j.bbrc.2008.11.122.
- 58 KIOM-79 prevents apoptotic cell death and AGEs accumulation in retinas of diabetic db/db mice. Sohn EJ, Kim YS, Kim CS, Lee YM, Kim JS. *J Ethnopharmacol*. 2009 Jan 12;121(1):171-4. doi: 10.1016/j.jep.2008.09.036.
- 59 (-)-Epigallocatechin gallate suppresses azoxymethane-induced colonic premalignant lesions in male C57BL/KsJ-db/db mice. Shimizu M, Shirakami Y, Sakai H, Adachi S, Hata K, Hirose Y, Tsurumi H, Tanaka T, Moriwaki H. *Cancer Prev Res (Phila)*. 2008 Sep;1(4):298-304. doi: 10.1158/1940-6207.CAPR-08-0045.
- 60 Anti-diabetic effects of compound K versus metformin versus compound K-metformin combination therapy in diabetic db/db mice. Yoon SH, Han EJ, Sung JH, Chung SH. *Biol Pharm Bull*. 2007 Nov;30(11):2196-200.
- 61 Effects of okchun-san, a herbal formulation, on blood glucose levels and body weight in a model of Type 2 diabetes. Chang MS, Oh MS, Kim DR, Jung KJ, Park S, Choi SB, Ko BS, Park SK. *J Ethnopharmacol*. 2006 Feb 20;103(3):491-5.



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/

