

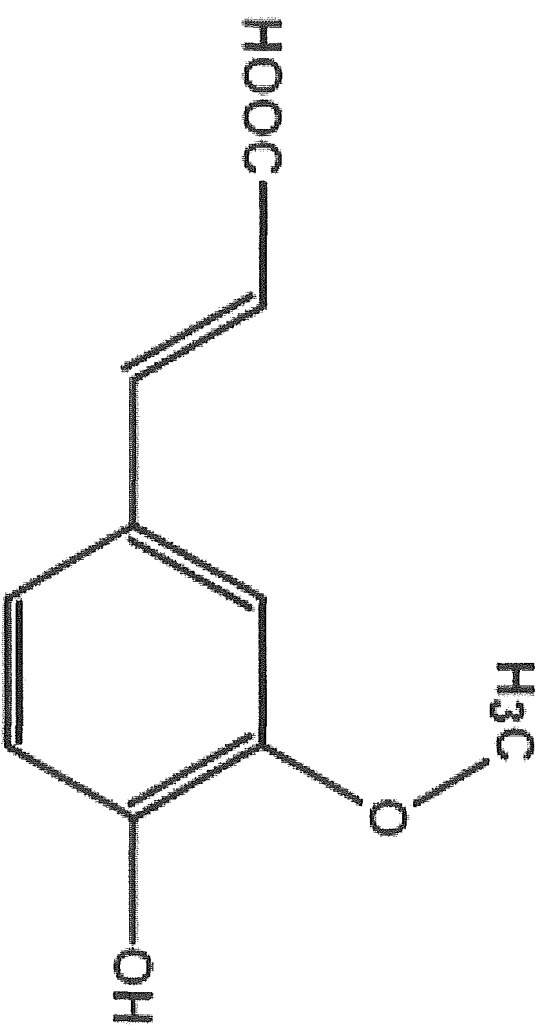
Table 18. Incidence of non-proliferative lesions in rats fed with ferulic acid that were found dead and killed at the end of the study

<Males>

Organs	Lesions	Dose level of ferulic acid (%)			
		0	0.5	1.0	2.0
Lung	Pneumonia	1 / 52 (2%)	1 / 52 (2%)	1 / 52 (2%)	1 / 52 (2%)
	Hemorrhage	0 / 52 (0%)	0 / 52 (0%)	2 / 52 (4%)	0 / 52 (0%)
Glandular stomach	Chronic gastritis	1 / 52 (2%)	2 / 52 (4%)	2 / 52 (4%)	2 / 52 (4%)
Liver	Fatty Liver	1 / 52 (2%)	0 / 52 (0%)	0 / 52 (0%)	0 / 52 (0%)
Pancreas	Chronic pancreatitis	4 / 52 (8%)	4 / 52 (8%)	6 / 52 (12%)	8 / 52 (15%)
Heart	Myocarditis	52 / 52 (100%)	52 / 52 (100%)	52 / 52 (100%)	52 / 52 (100%)
Kidney	Interstitial nephritis	52 / 52 (100%)	52 / 52 (100%)	52 / 52 (100%)	52 / 52 (100%)
Urinary bladder	Chronic cystitis	0 / 52 (0%)	1 / 52 (2%)	0 / 52 (0%)	0 / 52 (0%)
Skin	Dermoid cyst	1 / 52 (2%)	0 / 52 (0%)	0 / 52 (0%)	0 / 52 (0%)

<Females>

Organs	Lesions	Dose level of ferulic acid (%)			
		0	0.5	1.0	2.0
Lung	Pneumonia	0 / 52 (0%)	2 / 52 (4%)	0 / 52 (0%)	0 / 52 (0%)
	Hemorrhage	0 / 52 (0%)	2 / 52 (4%)	0 / 52 (0%)	0 / 52 (0%)
Glandular stomach	Chronic gastritis	0 / 52 (0%)	0 / 52 (0%)	3 / 52 (6%)	2 / 52 (4%)
Colon	Erosive colitis	0 / 52 (0%)	1 / 52 (2%)	0 / 52 (0%)	0 / 52 (0%)
Liver	Fatty liver	3 / 52 (6%)	1 / 52 (2%)	1 / 52 (2%)	1 / 52 (2%)
	Chronic pericholangitis	25 / 52 (48%)	20 / 52 (38%)	14 / 52 (27%)	13 / 52 (25%)
Pancreas	Chronic pancreatitis	6 / 52 (12%)	0 / 52 (0%)	8 / 52 (15%)	7 / 52 (13%)
Heart	Myocarditis	52 / 52 (100%)	52 / 52 (100%)	52 / 52 (100%)	52 / 52 (100%)
Kidney	Interstitial nephritis	52 / 52 (100%)	52 / 52 (100%)	52 / 52 (100%)	52 / 52 (100%)
	Hydronephrosis	0 / 52 (0%)	0 / 52 (0%)	0 / 52 (0%)	1 / 52 (2%)
Uterus	Adenomyosis	2 / 52 (4%)	1 / 52 (2%)	1 / 52 (2%)	0 / 52 (0%)
Adrenal gland	Fatty degeneration	0 / 52 (0%)	1 / 52 (2%)	2 / 52 (4%)	4 / 52 (8%)



MW: 194; Formula: $C_{10}H_{10}O_4$

Fig. 1. Chemical structure of ferulic acid

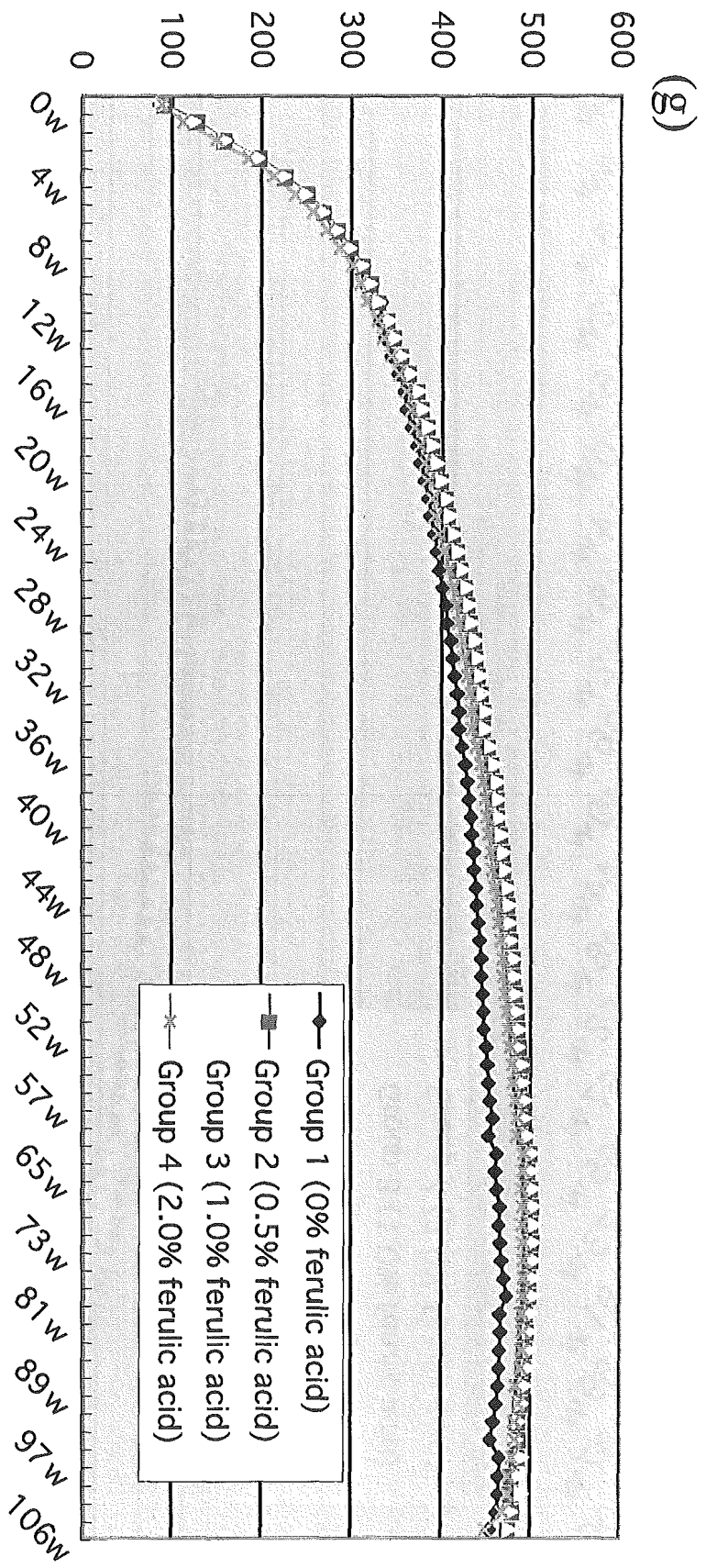


Fig. 2. Body weight changes of male rats

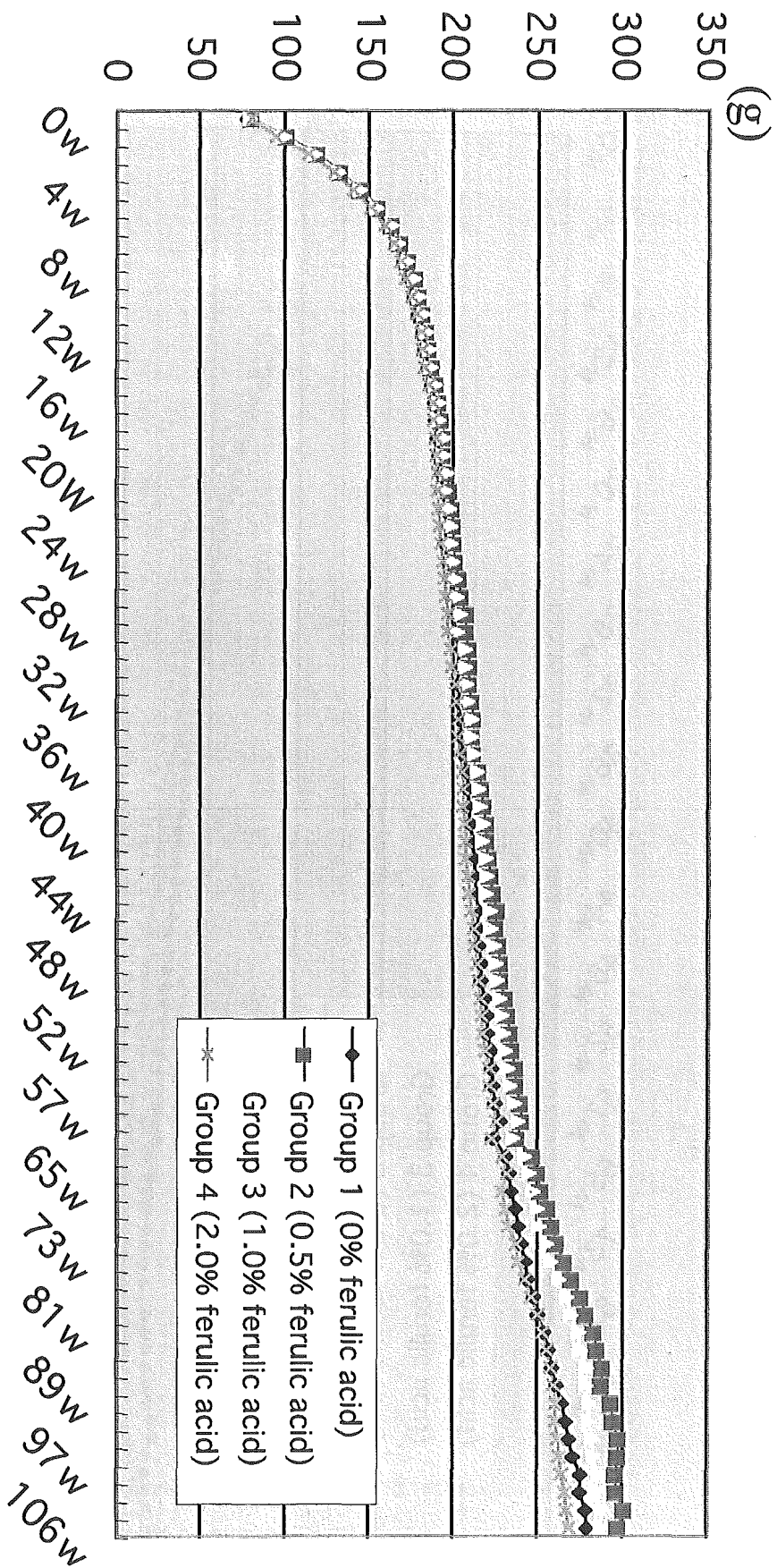


Fig. 3. Body weight changes of female rats

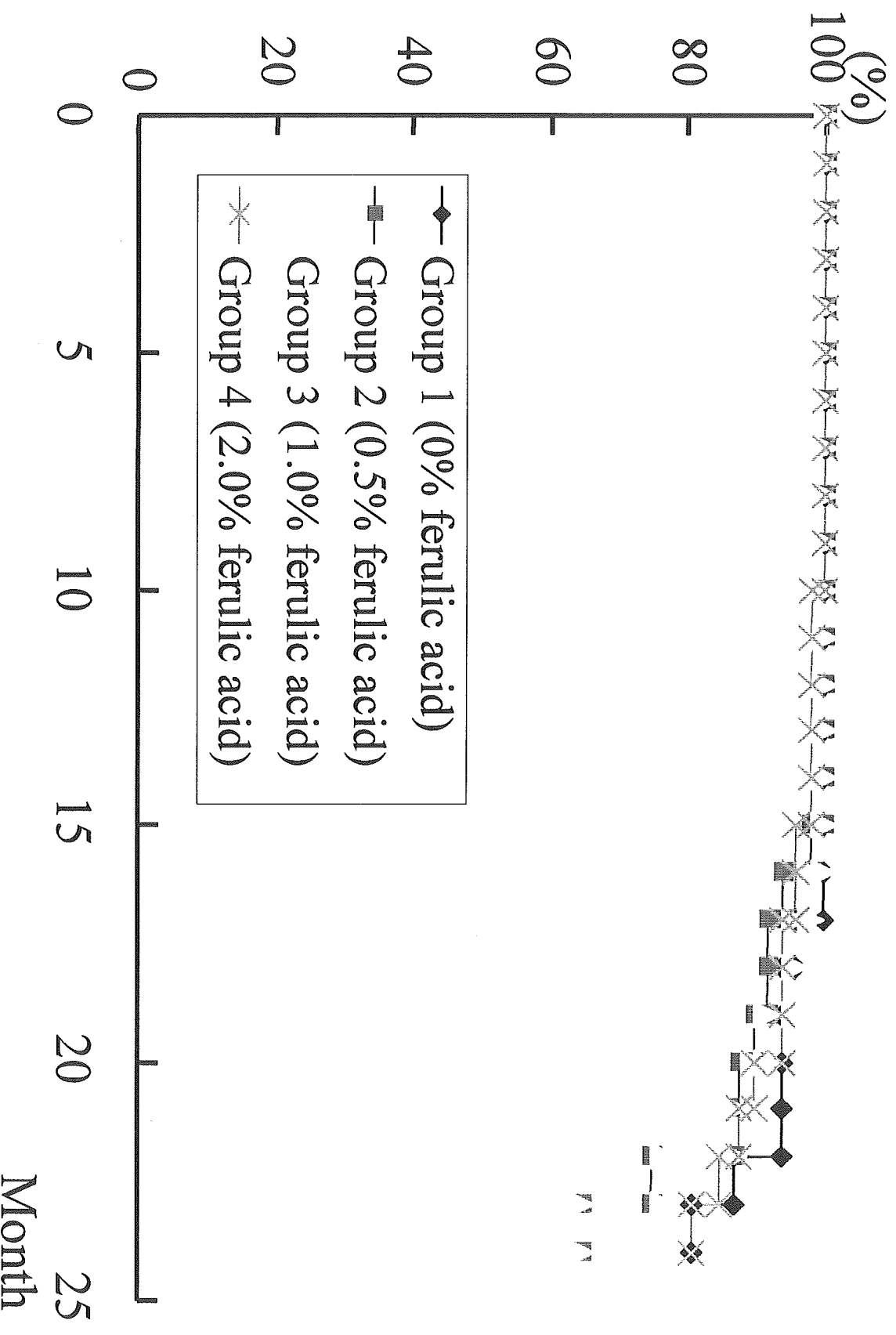


Fig. 4. Survival rate of male rats

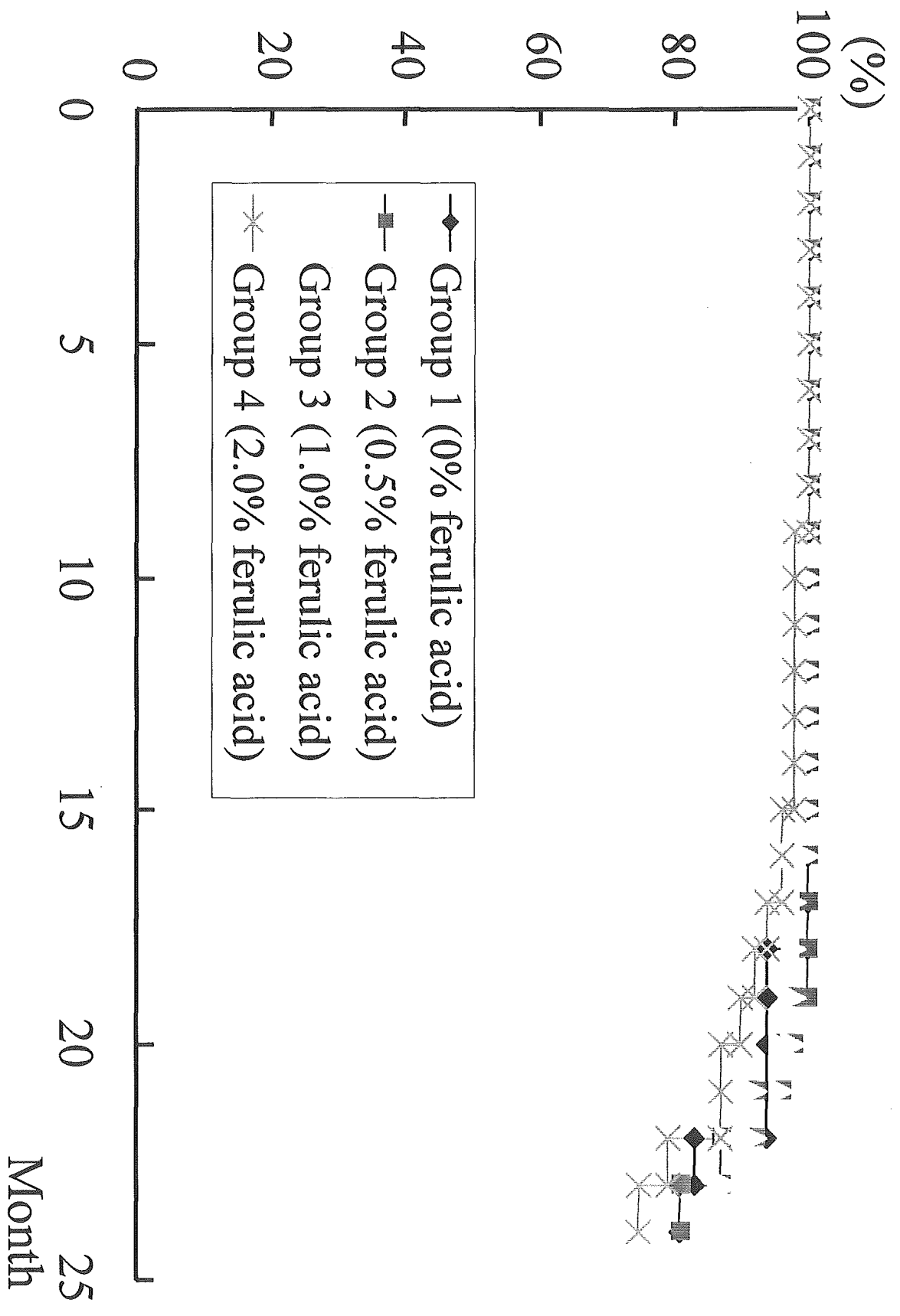


Fig. 5. Survival rate of female rats

研究成果の刊行に関する一覧表

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Kanki K, <u>Nishikawa A</u> , Masumura K, Umemura T, Imazawa T, Kitamura Y, Nohmi T, Hirose M	<i>In vivo</i> mutational analysis of liver DNA in <i>gpt</i> delta transgenic rats treated with the hepatocarcinogens <i>N</i> -nitrosopyrrolidine, 2-amino-3-methylimidazo[4,5- f]quinoline and di(2-ethylhexyl)phthalate	Mol. Carcinogen.	42	9-17	2005
<u>Nishikawa A</u> , Imazawa T, Kuroiwa Y, Kitamura Y, Kanki K, Ishii Y, Umemura T, Hirose M	Induction of colon tumors in C57BL/6j mice fed MeIQx, IQ or PhIP followed by dextran sulfate sodium treatment	Toxicol. Sci.	84	243-248	2005
<u>Nishikawa A</u> , Ikeda T, Son H-Y, Okazaki K, Imazawa T, Umemura T, Kimura S, Hirose M	Pronounced synergistic promotion of <i>N</i> -bis(2-hydroxypropyl)nitrosa mine-initiated thyroid tumorigenesis in rats treated with excess soybean and iodine-deficient diets	Toxicol. Sci.	86	258-263	2005
Kuroiwa Y, <u>Nishikawa A</u> , Imazawa T, Kanki K, Kitamura Y, Umemura T, Hirose M	Lack of subchronic toxicity of an aqueous extract of <i>Agaricus</i> <i>blazei</i> Murrill in F344 rats	Food Chem. Toxicol.	43	1047- 1053	2005
Kuroiwa Y, <u>Nishikawa A</u> , Imazawa T, Kitamura Y, Kanki K, Umemura T, Hirose M	Lack of carcinogenicity of <i>d</i> -xylose given in the diet to F344 rats for two years	Food Chem. Toxicol.	43	1399- 1404	2005

研究成果の刊行に関する一覧表

<u>Nishikawa A</u> , Sai K, Okazaki K, Son HY, Kanki K, Nakajima M, Kinae N, Nohmi T, Trosko JE, Inoue T, Hirose M	MX, a by-product of water chlorination, lacks <i>in vivo</i> genotoxicity in <i>gpt</i> delta mice but inhibits gap junctional intercellular communication in rat WB cells	Environ. Mol. Mutagen.	47	48-55	2006
Kuroiwa Y, <u>Nishikawa A</u> , Imazawa T, Kitamura Y, Kanki K, Ishii Y, Umemura T, Hirose M	A subchronic toxicity study of <i>dunaliella</i> carotene in F344 rats	Food Chem. Toxicol.	44	138-145	2006
Umemura T, Kanki K, Kuroiwa Y, Ishii Y, Okano K, Nohmi T, <u>Nishikawa A</u> , Hirose M	<i>In vivo</i> mutagenicity and initiation following oxidative DNA lesion in the kidneys of rats given potassium bromate	Cancer Sci.	97	829-835	2006
<u>Tanaka, T.</u> , Suzuki, R., Kohno, H., Sugie, S., Takahashi, M. and Wakabayashi, K.	Colonic adenocarcinomas rapidly induced by the combined treatment with 2-amino-1-methyl-6-phenylimidazo[4,5- <i>b</i>]pyridine and dextran sodium sulfate in male ICR mice possess β - <i>catenin</i> gene mutations and increases immunoreactivity for β -catenin, cyclooxygenase-2, and inducible nitric oxide synthase	Carcinogenesis	26	229-238	2005
Kohno, H., Suzuki, R., Sugie, S. and <u>Tanaka, T.</u>	β - <i>Catenin</i> mutations in a mouse model of inflammation-related colon carcinogenesis induced by 1,2-dimethylhydrazine and dextran sodium sulfate	Cancer Sci.	96	69-76	2005

研究成果の刊行に関する一覧表

<p>Tanaka, T., Kohno, H., Suzuki, R., Hata, K., Sugie, S., Niho, N., Sakano, K., Takahashi, M. and Wakabayashi, K.</p>	<p>Dextran sodium sulfate promotes colorectal carcinogenesis in <i>Apc^{Min/+}</i> mice: Inflammation stimuli by dextran sodium sulfate results in development of multiple colonic neoplasms</p>	<p>Int. J. Cancer</p>	<p>118</p>	<p>25-34</p>	<p>2006</p>
<p>Suzuki, R., Kohno, H., Sugie, S., Nakagama, H. and Tanaka, T.</p>	<p>Strain differences in susceptibility to azoxymethane and dextran sodium sulfate-induced colon carcinogenesis in mice</p>	<p>Carcinogenesis</p>	<p>27</p>	<p>162-169</p>	<p>2006</p>
<p>Suzuki, R., Kohno, H., Suzui, M., Yoshimi, N., Tsuda, H., Wakabayashi, K. and Tanaka, T.</p>	<p>An animal model for the rapid induction of tongue neoplasms in human <i>c-Ha-ras</i> proto-oncogene transgenic rats by 4-nitroquinoline 1-oxide: Its potential use for preclinical chemoprevention studies</p>	<p>Carcinogenesis</p>	<p>27</p>	<p>619-630</p>	<p>2006</p>