

## 1. Composition of cat food

Ingredients of seven commercial (CD-1 – CD-4; CW-5 – CW-7) and five self-prepared (SP-1 – SP-5) cat food tested in this study:

- CD-1: salmon meal, turkey meal, yellow peas, chicken fat, chicken protein hydrolyzed, chicken liver, salmon oil, tapioca starch, apples, carrots, flaxseed, chickpeas, hydrolyzed crustacean shells, cartilage extract, brewer's yeast, chicory root, Yucca Schidigera, algae, psyllium, thyme, rosemary, oregano, cranberries, blueberries, raspberries;
- CD-2: chicken meal, peas, sweet potatoes, chicken fat (preserved with mixed tocopherols), starch, roasted venison, smoked salmon, natural flavor, ocean fish meal, taurine, dried chicory root, tomatoes, blueberries, raspberries, Yucca Schidigera extract, *Enterococcus faecium*, *Lactobacillus casei*, *Lactobacillus acidophilus*, *Saccharomyces cerevisiae* fermentation solubles, dried *Aspergillus oryzae* fermentation extract, niacin, biotin, folic acid, all minerals and vitamins recommended by AAFCO in cat nutrition;
- CD-3: dehydrated poultry protein, maize, rice, vegetable protein isolate, animal fats, wheat, vegetable fibres, wheat flour, hydrolyzed animal proteins, maize gluten, chicory pulp, fish oil, minerals, soya oil, psyllium husks and seeds, yeasts and parts thereof, fructo-oligo-saccharides, hydrolyzed yeast (source of manno-oligo-saccharides), borage oil, hydrolyzed crustaceans (source of glucosamine), marigold extract (source of lutein), hydrolyzed cartilage (source of chondroitin);
- CD-4: fresh poultry (min. 20%), rice, poultry meat meal, yellow millet, sorghum, animal fat, dried and defatted meat, liver (dehydrated), fish meal, hydrolyzed protein, meat meal, powdered egg, cellulose fibres, beet pulp (sugar removed), potato protein, linseed, fish oil, yeast (dehydrated), potassium chloride, calcium carbonate, cranberry (dehydrated), blueberry (dehydrated), mussel powder, chicory powder, blooms of marigold (dehydrated), yucca extracts (dehydrated);
- CW-5: meat and meat-based products (4% beef), vegetable protein extract, fish and fish products, vegetables (carrot, tomatoes, **courgette**), minerals, sugar;
- CW-6: meat and animal by-products (44%, among others 4% of lamb), cereals, minerals, sugar;
- CW-7: poultry gizzards (at least 72%), broth, calcium carbonate;
- SP-1: beef shank, water, chicken wings, beef plate, chicken hearts, chicken liver, yolk, pork hemoglobin, salmon oil, egg shell meal, Himalayan salt, brewer's yeast, taurine, cod-liver oil, algae meal, vitamin E (Tokovit E);
- SP-2: turkey thigh with skin, water, turkey hearts, turkey liver, yolk, pork hemoglobin, salmon oil, egg shell meal, Himalayan salt, brewer's yeast, taurine, cod-liver oil, algae meal, vitamin E;
- SP-3: turkey thigh with skin, water, whole chicken wings, chicken hearts, chicken gizzards, chicken liver, yolk, pork hemoglobin, salmon oil, egg shell meal, Himalayan salt, brewer's yeast, taurine, cod-liver oil, algae meal, vitamin E;

- SP-4: water, chicken thigh with skin and bones, chicken breast with skin, duck breast with skin, duck hearts, duck liver, yolk, pork hemoglobin, salmon oil, egg shell meal, Himalayan salt, brewer's yeast, taurine, cod-liver oil, algae meal, vitamin E;
- SP-5: beef shank, water, beef plate, calf lungs, calf heart, beef liver, calf spleen, yolk, pork hemoglobin, salmon oil, egg shell meal, Himalayan salt, brewer's yeast, taurine, cod-liver oil, algae meal, vitamin E.

## 2. Fatty acids composition

The following fatty acids were identified in all examined foods:

- saturated fatty acids (SFA):

C10:0 – decanoic acid (capric acid), C12:0 – dodecanoic acid (lauric acid), C14:0 – tetradecanoic acid (myristic acid), C15:0 – pentadecanoic acid, C16:0 – hexadecanoic acid (palmitic acid), C17:0 – heptadecanoic acid and C18:0 – octadecanoic acid (stearic acid);

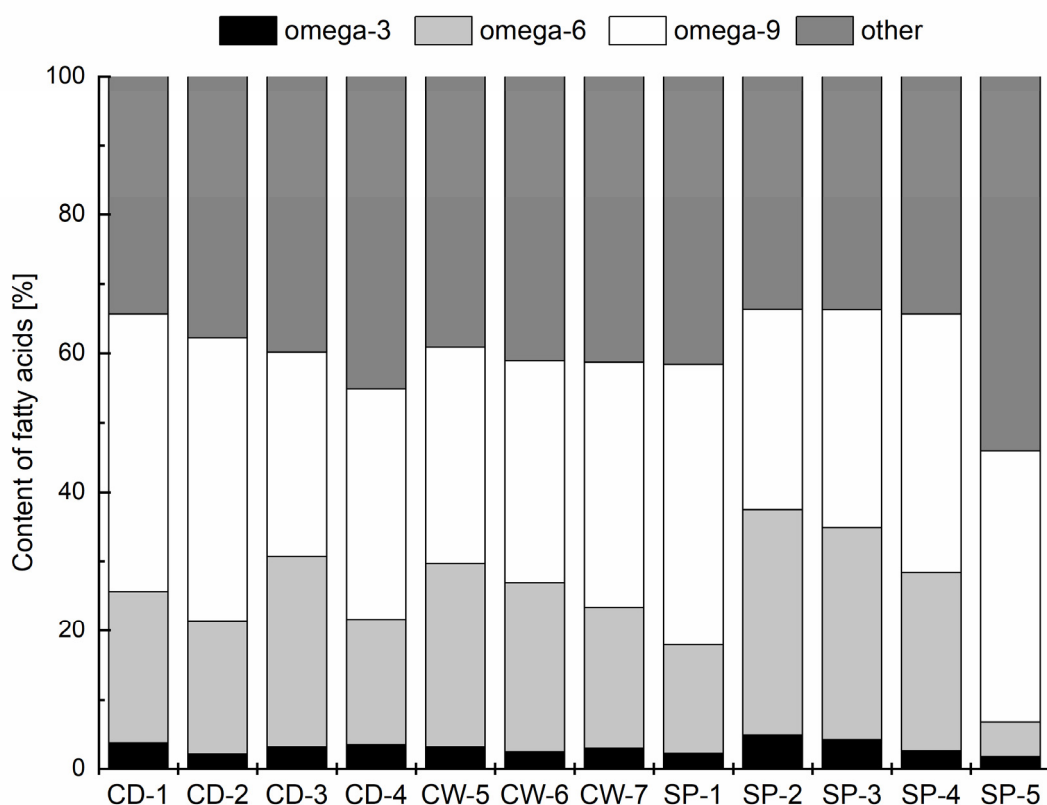
- monounsaturated fatty acids (MUFA):

C14:1 – *cis*-9-tetradecenoic acid (myristoleic acid), C16:1 – *cis*-9-hexadecenoic acid (palmitoleic acid), C17:1 – *cis*-10-heptadecenoic acid, C18:1 n-9 – *cis*-9-octadecenoic acid (oleic acid), C20:1 n-9 – *cis*-11-eicosenoic acid (gondoic acid);

- polyunsaturated fatty acids (PUFA):

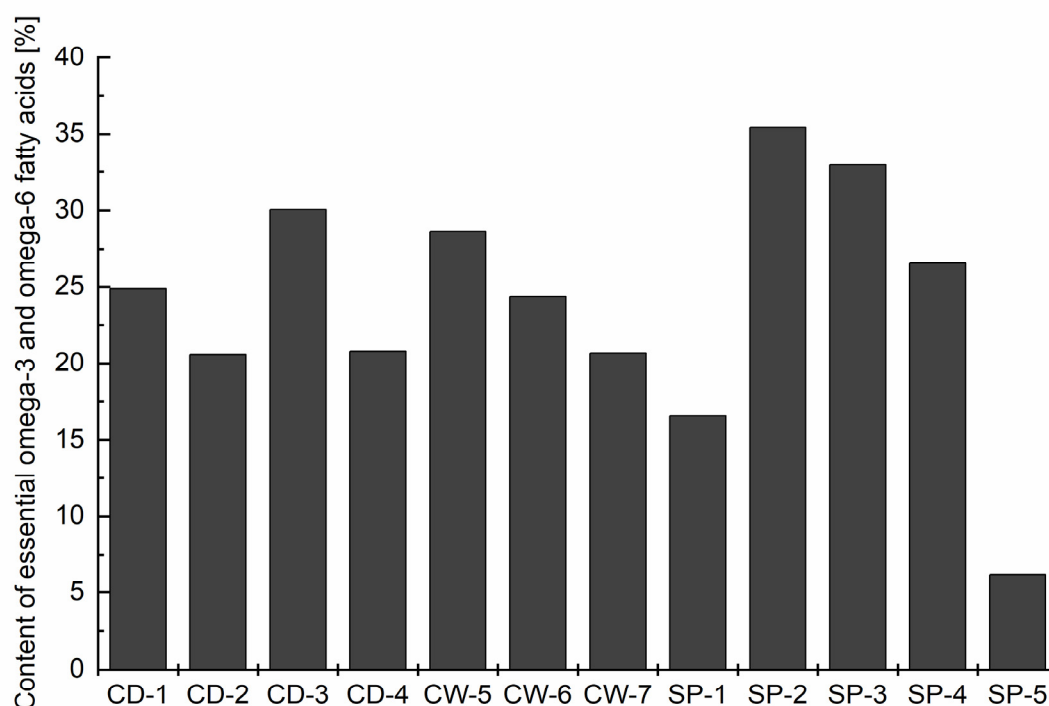
C18:2 n-6 – *cis*-9,12-octadecadienoic acid (linoleic acid), C18:3 n-3 – *cis*-9,12,15-octadecatrienoic acid ( $\alpha$ -linolenic acid), C20:2 n-6 – *cis*-11,14-eicosadienoic acid (eicosadienoic acid), C20:3 n-6 – *cis*-8,11,14-eicosatrienoic acid (dihomo- $\gamma$ -linolenic acid), C20:4 n-6 – *cis*-5,8,11,14-eicosatetraenoic acid (arachidonic acid), C20:5 n-3 – *cis*-5,8,11,14,17-eicosapentaenoic acid (eicosapentaenoic acid), C22:6 n-3 – *cis*-4,7,10,13,16,19-docosahexaenoic acid (docosahexaenoic acid).

Among all identified fatty acids three of them belonging to the omega-3 group ( $\alpha$ -linolenic acid, eicosapentaenoic acid and docosahexaenoic acid), four to the omega-6 group (linoleic acid, eicosadienoic acid, dihomogamma-linolenic acid and arachidonic acid) and two to the omega-9 group (oleic acid and gondoic acid) were detected. The percentage of omega-3, omega-6 and omega-9 in all foods are presented in Figure S1. Omega-3 fatty acids content in all foods is similar and much lower than omega-9 or omega-6 (significantly lower than in other foods is a content of omega-6 in SP-5).



**Figure S1.** The content of omega-3, omega-6 and omega-9 fatty acids for fats extracted from commercial and self-prepared cat food.

The most important omega-3 and omega-6 fatty acids in cat's diet are  $\alpha$ -linolenic, eicosapentaenoic, docosahexaenoic, linoleic and arachidonic ones. The highest content of mentioned fatty acids essential for cats is for SP-2 (35.44%) and SP-3 (32.95%), the lowest for SP-1 (16.56%) and SP-5 (only 6.19%), while for other tested foods – between 20 and 30% (Figure S2).



**Figure S2.** The content of essential omega-3 and omega-6 fatty acids for fats extracted from commercial and self-prepared cat food.

### 3. Fatty acids distribution

Content of fatty acids (%) of the triacylglycerols and of isolated *sn*-2 monoacylglycerols was used to calculate the composition of fatty acids in the *sn*-1 and *sn*-3 positions. The composition of selected fatty acids in the internal (*sn*-2) and external (*sn*-1,3) positions of triacylglycerols in fats extracted from commercial and self-prepared cat food was presented in Table S1 and S2, respectively. The data from Tables S1 and S2 was used to calculate the percentage of selected fatty acids (C16:0, C18:0, C18:1 and C18:2) in fats extracted from self-prepared cat food and is presented in Figure 2 in main manuscript.

**Table S1.** The composition of selected fatty acids (%) in the internal (*sn*-2) and external (*sn*-1,3) positions of TAG in fats extracted from commercial cat food.

	CD-1		CD-2		CD-3		CD-4		CW-5		CW-6		CW-7	
	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3
C16:0	13.61	22.38	14.62	25.92	13.04	27.25	13.44	36.68	16.34	25.44	25.41	21.83	22.48	24.63
C18:0	6.91	6.58	8.05	7.41	5.81	5.22	8.59	9.19	8.37	5.69	24.24	2.42	20.66	3.01
C18:1 n-9	41.02	37.47	45.10	37.95	35.21	26.01	45.50	26.29	33.03	29.11	24.14	35.45	30.66	37.02
C18:2 n-6	27.36	17.12	23.39	15.88	35.16	20.79	19.37	16.00	30.98	22.28	17.56	23.96	17.30	17.74

**Table S2.** The composition of selected fatty acids (%) in the internal (*sn*-2) and external positions (*sn*-1,3) of TAG in fats extracted from self-prepared cat food.

	SP-1		SP-2		SP-3		SP-4		SP-5	
	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3	<i>sn</i> -2	<i>sn</i> -1,3
C16:0	26.42	17.37	10.18	20.51	10.22	21.04	12.91	23.34	15.74	28.50
C18:0	6.85	12.79	5.45	7.70	4.99	8.27	5.32	7.36	13.19	21.47
C18:1 n-9	32.66	43.25	28.14	27.88	31.31	30.14	42.15	33.54	47.20	34.31
C18:2 n-6	21.75	8.44	44.06	21.74	40.92	20.27	28.71	19.61	5.25	2.05