solutions pet products

DIETARY ANALYSIS

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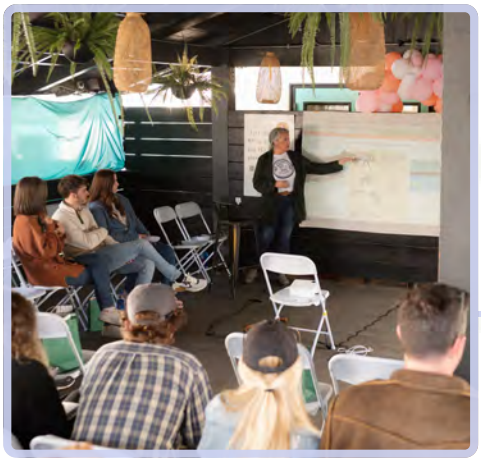
DIETARY ANALYSIS

overview

focus

- consumer education
- nutritional transparency
- whole food formulation
- toxicities & deficiencies



formulation philosophy

- ratios and nutritional relationships are more important than nutritional minimums (per HTMA data)
- the more mankind processes food, the more that food degrades, losing the symbiotic relationship between food and body
- nature doesn't work with precision - she uses relationships, seasons, and time to deliver balanced nutrition

This document aims to demonstrate Solutions Pet Products' commitment to transparency and nutritional excellence by providing detailed nutritional profiles for each of our diets, which surpass the standards set by AAFCO. Additionally, it seeks to enlighten readers about the limitations and flaws inherent in the current scientific and regulatory frameworks governing pet food formulations, as defined by AFFCO, NRC, and FEDIAF profiles. Through this educational endeavor, the document underscores the nutritional superiority of whole foods over sterilized products that are supplemented with synthetic isolated nutrients.

We've enhanced our nutritional profiles to include regulatory data, laboratory analysis, and physiological data to empower consumers. By highlighting shortcomings in science and regulation, we aim to drive DDA reform: funding unbiased research, setting maximum limits, improving sample sizes for inspections, and emphasizing contaminant avoidance and ratio considerations.

By illustrating how synthetic additives can be contaminated with heavy metals and lack the synergistic support of other nutrients, the document aims to foster awareness about the potential risks associated with such additives. Drawing upon data from Hair Tissue Mineral Analysis (HTMA) resources, it substantiates the prevalence of nutritional deficiencies and toxicities in pet foods utilizing synthetic nutrients, highlighting the imperative for a more holistic approach to pet nutrition.

DIETARY ANALYSIS

formulation philosophy

Solutions Pet Products formulates to meet and exceed the regulatory suggestions for Nutritional Adequacy for Adult Maintenance. We acknowledge the value of meticulous formulation, with ratios and nutritional relationships being even more important than meeting minimums, according to HTMA statistical data.

For example, foods with high iron levels should contain lower manganese to prevent excessive uptake of iron, which may result in Iron Overload and intestinal inflammation. And foods with high copper should contain higher levels of molybdenum (a nutritionally “ignored” mineral) to prevent copper toxicity.

Solutions Pet Products also respects and accounts for the fact that humans will never understand all of the intricacies of food that Mother Nature provides. Beyond the nutritional profile listed below, our raw, unadulterated, fermented, sprouted, unsterilized products in their minimally processed forms contain flavonoids, terpenes, enzymes, polyphenols, phytosterols, prebiotics, probiotics, postbiotics, antioxidants, and more benefits provided by nature. The more man processes foods, the more these and other compounds degrade and begin to lose symbiotic value in the food and body.

While Solutions Pet Products adheres to AAFCO suggestions, it is the symbiosis of nature that we trust. We know that when you provide the body with foods that nature intended for it, it thrives. Even when science doesn't understand it completely. Even if nature doesn’t provide a precise , identical nutritional profile every time it produces nourishment for its beings. It does this, in part, by providing balanced nutrition over time - thus, bodies are designed to tolerate and benefit from seasonal variations.

DIETARY ANALYSIS

formulation philosophy

FORMULATION METHODOLOGY

Solutions Pet Products utilizes experience, research, food science, and regulatory guidelines to formulate nutritionally complete diets. Additionally, we utilize features of AnimalDietFormulator.com (ADF) to verify our data. ADF is a fantastic tool and we strongly believe, based on extensive documentation and research, that the utilization of a "formulated nutritional profile" framework is invaluable compared to basic DIY recipes. However, it's important to keep in mind that software tools are only as good as the data that is put into them. ADF certainly provides the most comprehensive data on food ingredients available to consumers, however, variability of micronutrient profiles of food ingredients is dramatic, as seen below.

Expecting every batch of pet food to have precisely the same nutritional makeup, even if synthetically supplemented, is unrealistic.

When analyzing fresh foods, remember that nature doesn't adhere to a rigid standard where every plant or animal always maintains an identical nutritional composition. Factors such as the season, temperature, lighting, and time of day can significantly influence the nutritional profile of ingredients. USDA data and combined lab analysis reflects this fact - and this information, the best information available, is what's used in formulation software.

Moreover, water plays a crucial role in facilitating the delivery of nutrients into cells, making high moisture diets more nutritious than low-moisture diets.

CAFO (confined animal feedlot operation) Beef Liver: 1,030 ppm of Copper

Grass fed, Grain finished Beef Liver: 20-500 ppm of Copper

Grass fed, Grass finished Beef Liver: 1-70 ppm of Copper

FOOD INGREDIENT CONTAMINATION

"Feedstuffs derived from plants are a common source of minerals. Levels of minerals in plant tissues vary greatly due to the natural variation of soil minerals... Plants can accumulate toxic levels of minerals by deposition into their tissues or as the result of sources of contamination with soil or dust... Mineral supplements are commonly added to animal diets to correct deficiencies found in pastures, forages, and feed ingredients. Some sources of mineral supplements may contain potentially toxic levels of contaminating minerals, depending upon the source of the supplements and the method of its processing. For example, some rock phosphate deposits may be naturally high in fluoride or vanadium, and cause toxiosis when supplemented in animal diets to meet their phosphorus requirement. Toxic levels of minerals may accidentally occur due to mistakes in feed formulation and manufacturing, or from contamination during the storage or transportation. Such accidental administration can potentially result in very high mineral levels and cause acute toxiosis and death, whereas most other modes of introduction typically cause toxiosis only after chronic exposure." - Mineral Tolerances of Animals, 2nd Edition. **In summary, foods made by nature are less risky than foods made by man.**

DIETARY ANALYSIS

complete diet ingredients & GA's

Pork Recipe	Chicken Recipe	Beef Recipe
pork, organic pork heart, organic pork liver, organic pork kidney, pork spleen, organic ground pork bone, pork gelatin, raw sheep's milk, whole fermented duck eggs, organic kale, organic parsley, organic fermented okra, fermented cod liver, organic fermented ginger, organic sprouted chia seeds, sea salt, wheat germ oil (vitamin e), kelp	organic chicken, organic chicken heart, organic chicken liver, organic ground chicken bone, organic chicken gelatin, raw sheep's milk, fermented chicken eggs, organic kale, organic parsley, organic fermented okra, fermented cod liver oil, organic fermented ginger, organic sprouted chia seeds, raw goat butter, sea salt, wheat germ oil (vitamin e), kelp	beef, beef heart, beef liver, beef kidney, beef bone, beef gelatin, raw sheep's milk, whole fermented duck eggs, organic kale, organic parsley, fermented organic okra, sprouted organic chia seeds, fermented organic ginger, fermented cod liver, sea salt, wheat germ oil (vitamin e), kelp
protein: ~15% fat: ~19% fiber: ~1% carbohydrates: ~2% moisture: ~62% ash: ~2% 1:1.2 protein to fat ratio	protein: ~16% fat: ~19% fiber: ~1% carbohydrates: ~1% moisture: ~62% ash: ~2% 1:1.2 protein to fat ratio	protein: ~17% fat: ~18% fiber: ~1% carbohydrates: ~2% moisture: ~61% ash: ~2% 1:1.1 protein to fat ratio
animal ingredients: ~91% non-animal ingredients: ~9.5% organ: >25% bones: 10%	animal ingredients: ~91% non-animal ingredients: ~9% organ: >25% bones: 10%	animal ingredients: ~92% non-animal ingredients: ~8% organ: >25% bones: 10%

Our diets are formulated to meet or exceed these values per 1000 kcals

DIETARY ANALYSIS

complete pork recipe

FATS

monounsaturated fatty acids - 34.0g
polyunsaturated fatty acids - 13.6g
linoleic acid (18:2, n-6) - 8.2g
alpha-linoleic acid (18:3, n-3) - 2.3g
arachidonic acid (20:4, n-6)- 0.85g
eicosapentaenoic acid (20:5, n-6) - 1.1g
docosapentaenoic acid (20:5, n-6) - 0.16g
docosahexaenoic acid (20:4, n-6) - 1.3g
stearidonic acid (20:5, n-6) - 1.3g
eicosadienoic acid (20:4, n-6) - 0.06g
Omega 3 Fatty Acids - 6.1g
Omega 6 Fatty Acids - 9.1g
Omega 6:Omega 3 ratio - 1.49:1

VITAMINS

vitamin A - 20,938iu
vitamin C - 55.4mg
vitamin D - 589iu
vitamin E - 537iu
vitamin K - 177mg
thiamine (vitamin B1) - 1.57mg
riboflavin (vitamin B2) - 5.97mg
niacin (vitamin B3) - 29.08
pyridoxine (vitamin B6) - 1.37mg
folate (vitamin B9) - 0.34mg
vitamin B12 - 0.04mg
pantothenic acid (vitamin B5) - 12.0mg
choline - 542.76mg
biotin (vitamin B7) - 0.002mg

AMINO ACIDS

tryptophan - 0.80g
threonine - 2.55g
isoleucine - 2.87g
leucine - 5.10g
lysine - 4.61g
methionine - 1.51g
cystine + methionine - 2.51g
taurine - 248.56mg
phenylalanine - 2.75g
tyrosine + phenylalanine - 4.89g
valine - 3.33g
arginine - 3.80g
histidine - 1.70g
alanine - 3.50g
aspartic acid - 5.19g
glutamic acid - 8.40g
glycine - 3.22g
proline - 2.90g
serine - 2.34g

MINERALS

calcium - 1.95g
magnesium - 0.15g
ca:p ratio - 1.2:1
sodium - 0.47g
selenium - 0.16mg
phosphorus - 1.31g
potassium - 1.51g
manganese - 2.15mg
zinc - 20.57
copper - 1.98mg
iodine - 2.16mg
iron - 30.5mg
purines - 384mg

DIETARY ANALYSIS

complete chicken recipe

FATS

monounsaturated fatty acids - 35.6g
polyunsaturated fatty acids - 19.1g
linoleic acid (18:2, n-6) - 7.7g
alpha-linoleic acid (18:3, n-3) - 2.3g
arachidonic acid (20:4, n-6)- 1.4g
eicosapentaenoic acid (20:5, n-6) - 1.2g
docosapentaenoic acid (20:5, n-6) - 0.21g
docosahexaenoic acid (20:4, n-6) - 1.54g
stearidonic acid (20:5, n-6) - 1.25g
eicosadienoic acid (20:4, n-6) - 0.27g
Omega 3 Fatty Acids - 6.4g
Omega 6 Fatty Acids - 9.3g
Omega 6:Omega 3 ratio - 1.45:1

VITAMINS

vitamin A - 25,252iu
vitamin C - 50.6mg
vitamin D - 620iu
vitamin E - 605iu
vitamin K - 213mg
thiamine (vitamin B1) - 1.28mg
riboflavin (vitamin B2) - 5.20mg
niacin (vitamin B3) - 29.69mg
pyridoxine (vitamin B6) - 1.32mg
folate (vitamin B9) - 0.84mg
vitamin B12 - 0.04mg
pantothenic acid (vitamin B5) - 11.66mg
choline - 491.84mg
biotin (vitamin B7) - 0.13mg

AMINO ACIDS

tryptophan - 0.75g
threonine - 2.69g
isoleucine - 2.97g
leucine - 5.06g
lysine - 5.01g
methionine - 1.58g
cystine + methionine - 2.50g
taurine - 297.5mg
phenylalanine - 2.81g
tyrosine + phenylalanine - 4.95g
valine - 3.43g
arginine - 4.18g
histidine - 1.81g
alanine - 3.90g
aspartic acid - 5.78g
glutamic acid - 8.93g
glycine - 4.28g
proline - 3.41g
serine - 2.79g

MINERALS

calcium - 2.00g
magnesium - 0.17g
ca:p ratio - 1.25:1
sodium - 0.91g
selenium - 0.11mg
phosphorus - 1.42g
potassium - 1.53g
manganese - 2.11mg
zinc - 20.01mg
copper - 1.99mg
iodine - 2.69mg
iron - 21.3mg
purines - 243mg

DIETARY ANALYSIS

complete beef recipe

FATS

monounsaturated fatty acids - 37.8g
polyunsaturated fatty acids - 6.5g
linoleic acid (18:2, n-6) - 2.91g
alpha-linoleic acid (18:3, n-3) - 1.3g
arachidonic acid (20:4, n-6)- 0.40g
eicosapentaenoic acid (20:5, n-6) - 0.92g
docosapentaenoic acid (20:5, n-6) - 0.11g
docosahexaenoic acid (20:4, n-6) - 1.07g
stearidonic acid (20:5, n-6) - 1.02g
eicosadienoic acid (20:4, n-6) - 0.08g
Omega 3 Fatty Acids - 4.4g
Omega 6 Fatty Acids - 9.9g
Omega 6:Omega 3 ratio - 2.22:1

VITAMINS

vitamin A - 17,717iu
vitamin C - 32.5mg
vitamin D - 509iu
vitamin E - 481iu
vitamin K - 180mg
thiamine (vitamin B1) - 1.28mg
riboflavin (vitamin B2) - 5.11mg
niacin (vitamin B3) - 28.51mg
pyridoxine (vitamin B6) - 1.38mg
folate (vitamin B9) - 0.50mg
vitamin B12 - 0.07mg
pantothenic acid (vitamin B5) - 7.88mg
choline - 629.03mg
biotin (vitamin B7) - 0.011mg

AMINO ACIDS

tryptophan - 0.72g
threonine - 2.51g
isoleucine - 2.73g
leucine - 5.07g
lysine - 4.89g
methionine - 1.82g
cystine + methionine - 2.54g
taurine - 182.2mg
phenylalanine - 2.77g
tyrosine + phenylalanine - 4.98g
valine - 3.18g
arginine - 3.96g
histidine - 0.63g
alanine - 3.36g
aspartic acid - 4.77g
glutamic acid - 8.66g
glycine - 3.26g
proline - 2.44g
serine - 2.54g

MINERALS

calcium - 3.63g
magnesium - 0.15g
ca:p ratio - 1.25:1
sodium - 0.60g
selenium - 0.13mg
phosphorus - 2.32g
potassium - 1.57 g
manganese - 1.58mg
zinc - 20.75mg
copper - 3.52mg
iodine - 2.50mg
iron - 16.79mg
purines - 254mg

DIETARY ANALYSIS

cat food diet ingredients & GA's

	Chicken For Cats	Pork For Cats
	Whole chicken, organic chicken hearts, organic chicken liver, raw fermented goat milk, organic chicken skin, fermented chicken eggs (with shell), raw fermented sheep milk, montmorillonite, fermented cod liver, raw butter, sea salt, wheat germ oil (for vitamin e)	pork, organic pork heart, organic pork liver, organic pork kidney, ground pork bone, raw cultured goat milk, fermented duck eggs (with shell), pork gelatin, raw cultured sheep milk, montmorillonite, fermented cod liver, sea salt, wheat germ oil (for vitamin e)
	protein: ~14% fat: ~10% fiber: ~2% carbohydrates: ~0% moisture: ~74% ash: ~2%	protein: ~14% fat: ~10% fiber: ~2% carbohydrates: ~0% moisture: ~74% ash: ~2%
	animal ingredients: ~99% non-animal ingredients: ~1% organ: >25% bones: 10%	animal ingredients: ~99% non-animal ingredients: ~1% organ: >25% bones: 10%

Our diets are formulated to meet or exceed these values per 1000 kcals

DIETARY ANALYSIS

complete chicken recipe for cats

FATS

monounsaturated fatty acids - 26.87g
polyunsaturated fatty acids - 13.4g
linoleic acid (18:2, n-6) - 10.13g
alpha-linoleic acid (18:3, n-3) - 0.50g
arachidonic acid (20:4, n-6)- 1.469g
eicosapentaenoic acid (20:5, n-6) - 0.68g
docosapentaenoic acid (20:5, n-6) - 0.15g
docosahexaenoic acid (20:4, n-6) - 0.80g
Omega 6:Omega 3 ratio - 5.83:1

VITAMINS

vitamin A - 23,401iu
vitamin C - 23.67mg
vitamin D - 594iu
vitamin E - 8.8iu
vitamin K - 0.04mg
thiamine (vitamin B1) - 1.67mg
riboflavin (vitamin B2) - 3.16mg
niacin (vitamin B3) - 35.34mg
pyridoxine (vitamin B6) - 2.25mg
vitamin B12 - 0.03mg
pantothenic acid (vitamin B5) - 10.45mg
choline - 527mg
biotin (vitamin B7) - 1.18mg

AMINO ACIDS

tryptophan - 0.99g
threonine - 3.65g
isoleucine - 4.17g
leucine - 6.75g
lysine - 6.97g
methionine - 2.18g
cystine + Methionine - 3.18g
taurine - 925mg
phenylalanine - 3.64g
tyrosine + phenylalanine - 6.13g
valine - 4.46g
arginine - 5.27g
histidine - 2.46g

MINERALS

calcium - 1.96g
magnesium - 0.16g
ca:p ratio - 1.27:1
sodium - 0.50g
selenium - 0.083mg
phosphorus - 1.58g
potassium - 1.28g
manganese - 7.11mg
zinc - 8.29mg
copper - 1.22mg
iodine - 0.58mg
iron - 80.75mg

DIETARY ANALYSIS

complete pork recipe for cats

FATS

monounsaturated fatty acids - 23.88g
polyunsaturated fatty acids - 11.90g
linoleic acid (18:2, n-6) - 9.61g
alpha-linoleic acid (18:3, n-3) - 0.51g
arachidonic acid (20:4, n-6)- 0.67g
eicosapentaenoic acid (20:5, n-6) - 0.47g
docosapentaenoic acid (20:5, n-6) - 0.09g
docosahexaenoic acid (20:4, n-6) - 0.44g
Omega 6:Omega 3 ratio - 7.09:1

VITAMINS

vitamin A - 14,521iu
vitamin C - 25.57mg
vitamin D - 476.24iu
vitamin E - 3.96iu
vitamin K - 0.04mg
thiamine (vitamin B1) - 1.36mg
riboflavin (vitamin B2) - 3.80mg
niacin (vitamin B3) - 25.79mg
pyridoxine (vitamin B6) - 1.50mg
pantothenic acid (vitamin B5) - 8.36mg
choline - 431.60mg
biotin (vitamin B7) - 0.03mg

AMINO ACIDS

tryptophan - 0.99g
threonine - 3.65g
isoleucine - 4.17g
leucine - 6.75g
lysine - 6.97g
methionine - 2.18g
cystine + Methionine - 3.18g
taurine - 925mg
phenylalanine - 3.64g
tyrosine + phenylalanine - 6.13g
valine - 4.46g
arginine - 5.27g
histidine - 2.46g

MINERALS

calcium - 0.72g
magnesium - 0.09g
ca:p ratio - 0.69:1
sodium - 0.68g
selenium - 0.66mg
phosphorus - 1.04g
potassium - 1.22g
manganese - 5.30mg
zinc - 10.57mg
copper - 1.33mg
iodine - 0.39mg
iron - 70.53mg

DIETARY ANALYSIS

gelatin jiggles ingredients & GA's

Pork Jiggles	Chicken Jiggles	Fish Jiggles	Beef Jiggles
pork gelatin (made with whole pig heads and whole pig feet), fermented organic red cabbage, organic blueberries	chicken gelatin (made with whole chicken heads and whole chicken feet), fermented organic ginger	fish gelatin (made from whole redfish frames), fermented whole herring, fermented cod liver oil, mango	beef gelatin (made with cow knuckles and cow hooves), organic fermented beets
protein: ~5% fat: ~3% fiber: ~0.00% carbohydrates: ~0.00% moisture: ~92% ash: ~0.24% kcals per oz: ~ 15	protein: ~3% fat: <1% fiber: ~0.00% carbohydrates: ~0.13% moisture: ~92% ash: ~0.57% kcals per oz: ~12	protein: ~3% fat: <1% fiber: ~0.00% carbohydrates: ~0.14% moisture: ~93% ash: ~0.48% kcals per oz: ~12	protein: ~4% fat: ~3% fiber: ~0.05% carbohydrates: ~4.4% moisture: ~92% ash: ~1.05% kcals per oz: ~25

Our diets are formulated to meet or exceed these values per 1000 kcals

DIETARY ANALYSIS

pork jiggles

FATS

monounsaturated fatty acids - 4.0g
polyunsaturated fatty acids - 10.5g
linoleic acid (18:2, n-6) - 0.22g
alpha-linoleic acid (18:3, n-3) - 0.40g
arachidonic acid (20:4, n-6)- 1.1g
eicosapentaenoic acid (20:5, n-6) - 0.03g
docosapentaenoic acid (20:5, n-6) - 0.58g
docosahexaenoic acid (20:4, n-6) - 1.18g
stearidonic acid (20:5, n-6) - 0.00g
eicosadienoic acid (20:4, n-6) - 0.00g
Omega 3 Fatty Acids - 2.20g
Omega 6 Fatty Acids - 1.34g
Omega 6:Omega 3 ratio - 0.61:1

VITAMINS

vitamin A - 478iu
vitamin C - 33.2mg
vitamin D - 5iu
vitamin E - 19.4iu
vitamin K - 0.01mg
thiamine (vitamin B1) - 0.51mg
riboflavin (vitamin B2) - 1.13mg
niacin (vitamin B3) - 11.17mg
pyridoxine (vitamin B6) - 0.48mg
folate (vitamin B9) - 0.41mg
vitamin B12 - 0.006mg
pantothenic acid (vitamin B5) - 6.69mg
choline - 63.5mg
biotin (vitamin B7) - 0.001mg

AMINO ACIDS

tryptophan - 0.40g
threonine - 1.46g
isoleucine - 1.46g
leucine - 2.70g
lysine - 2.56g
methionine - 0.67g
cystine + methionine - 0.76g
taurine - 15.00mg
phenylalanine - 1.53g
tyrosine + phenylalanine - 2.80g
valine - 1.78g
arginine - 1.72g
histidine - 0.94g
alanine - 0/41g
aspartic acid - 3.10g
glutamic acid - 3.96g
glycine - 1.51g
proline - 0.28g
serine - 0.29g

MINERALS

calcium - 0.44g
magnesium - 0.06g
ca:p ratio - 0.42:1
sodium - 0.61g
selenium - 0.05mg
phosphorus - 1.07g
potassium - 0.76g
manganese - 0.22mg
zinc - 6.05mg
copper - 1.01mg
iodine - 0.00mg
iron - 8.38mg

DIETARY ANALYSIS

chicken jiggles

FATS

monounsaturated fatty acids - 27.8g
polyunsaturated fatty acids - 15.9g
linoleic acid (18:2, n-6) - 13.4g
alpha-linoleic acid (18:3, n-3) - 0.60g
arachidonic acid (20:4, n-6)- 0.60g
eicosapentaenoic acid (20:5, n-6) - 0.08g
docosapentaenoic acid (20:5, n-6) - 0.15g
docosahexaenoic acid (20:4, n-6) - 0.28g
stearidonic acid (20:5, n-6) - 0.00g
eicosadienoic acid (20:4, n-6) - 0.34g
Omega 3 Fatty Acids - 1.14g
Omega 6 Fatty Acids - 14.4g
Omega 6:Omega 3 ratio - 12.6:1

VITAMINS

vitamin A - 487iu
vitamin C - 1.5mg
vitamin D - 31iu
vitamin E - 29iu
vitamin K - 13.6mg
thiamine (vitamin B1) - 0.59mg
riboflavin (vitamin B2) - 2.15mg
niacin (vitamin B3) - 11.95mg
pyridoxine (vitamin B6) - 1.04mg
folate (vitamin B9) - 0.19mg
vitamin B12 - 0.19mg
pantothenic acid (vitamin B5) - 5.35mg
choline - 265.7mg
biotin (vitamin B7) - 0.004mg

AMINO ACIDS

tryptophan - 0.60g
threonine - 2.12g
isoleucine - 2.26g
leucine - 3.59g
lysine - 3.82g
methionine - 2.92g
cystine + methionine - 3.99g
taurine - 87.7mg
phenylalanine - 0.89g
tyrosine + phenylalanine - 2.52g
valine - 1.82g
arginine - 2.49g
histidine - 1.30g
alanine - 2.49g
aspartic acid - 4.17g
glutamic acid - 7.22g
glycine - 2.12g
proline - 2.08g
serine - 1.79g

MINERALS

calcium - 2.75g
magnesium - 0.21g
ca:p ratio - 1.38:1
sodium - 1.51g
selenium - 0.05mg
phosphorus - 2.00g
potassium - 1.81g
manganese - 0.06mg
zinc - 5.15mg
copper - 0.35mg
iodine - 0.005mg
iron - 4.2mg

DIETARY ANALYSIS

fish jiggles

FATS

monounsaturated fatty acids - 32.5g
polyunsaturated fatty acids - 13.3g
linoleic acid (18:2, n-6) - 5.30g
alpha-linoleic acid (18:3, n-3) - 0.60g
arachidonic acid (20:4, n-6)- 0.50g
eicosapentaenoic acid (20:5, n-6) - 2.66g
docosapentaenoic acid (20:5, n-6) - 0.28g
docosahexaenoic acid (20:4, n-6) - 3.20g
stearidonic acid (20:5, n-6) - 1.50g
eicosadienoic acid (20:4, n-6) - 0.23g
Omega 3 Fatty Acids - 8.25g
Omega 6 Fatty Acids - 6.00g
Omega 6:Omega 3 ratio - 0.73:1

VITAMINS

vitamin A - 1,500iu
vitamin C - 3.50mg
vitamin D - 874iu
vitamin E - 479iu
vitamin K - 0.43mg
thiamine (vitamin B1) - 1.54mg
riboflavin (vitamin B2) - 3.31mg
niacin (vitamin B3) - 25.83mg
pyridoxine (vitamin B6) - 2.68mg
folate (vitamin B9) - 0.12mg
vitamin B12 - 0.04mg
pantothenic acid (vitamin B5) - 8.40mg
choline - 519.4mg
biotin (vitamin B7) - 0.001mg

AMINO ACIDS

tryptophan - 1.34g
threonine - 4.62g
isoleucine - 4.81g
leucine - 8.37g
lysine - 8.97g
methionine - 2.77g
cystine + methionine - 4.00g
taurine - 18.7mg
phenylalanine - 4.09g
tyrosine + phenylalanine - 7.87g
valine - 5.26g
arginine - 6.05g
histidine - 3.34g
alanine - 5.96g
aspartic acid - 9.78g
glutamic acid - 15.4g
glycine - 5.01g
proline - 4.53g
serine - 4.21g

MINERALS

calcium - 0.82g
magnesium - 0.27g
ca:p ratio - 0.46:1
sodium - 1.99g
selenium - 0.20mg
phosphorus - 1.77g
potassium - 3.12g
manganese - 0.19mg
zinc - 9.30mg
copper - 0.91mg
iodine - 0.20mg
iron - 8.54mg

DIETARY ANALYSIS

beef jiggles

FATS

monounsaturated fatty acids - 37.8g
polyunsaturated fatty acids - 6.5g
linoleic acid (18:2, n-6) - 2.91g
alpha-linoleic acid (18:3, n-3) - 1.3g
arachidonic acid (20:4, n-6)- 0.40g
eicosapentaenoic acid (20:5, n-6) - 0.92g
docosapentaenoic acid (20:5, n-6) - 0.11g
docosahexaenoic acid (20:4, n-6) - 1.07g
stearidonic acid (20:5, n-6) - 1.02g
eicosadienoic acid (20:4, n-6) - 0.08g
Omega 3 Fatty Acids - 4.4g
Omega 6 Fatty Acids - 9.9g
Omega 6:Omega 3 ratio - 2.22:1

VITAMINS

vitamin A - 17,717iu
vitamin C - 32.5mg
vitamin D - 509iu
vitamin E - 481iu
vitamin K - 180mg
thiamine (vitamin B1) - 1.28mg
riboflavin (vitamin B2) - 5.11mg
niacin (vitamin B3) - 28.51mg
pyridoxine (vitamin B6) - 1.38mg
folate (vitamin B9) - 0.50mg
vitamin B12 - 0.07mg
pantothenic acid (vitamin B5) - 7.88mg
choline - 629.03mg
biotin (vitamin B7) - 0.011mg

AMINO ACIDS

Tryptophan - 0.72g
Threonine - 2.51g
Isoleucine - 2.73g
Leucine - 5.07g
Lysine - 4.89g
Methionine - 1.82g
Cystine + Methionine - 2.54g
Taurine - 182.2mg
Phenylalanine - 2.77g
Tyrosine + Phenylalanine - 4.98g
Valine - 3.18g
Arginine - 3.96g
Histidine - 0.63g
Alanine - 3.36g
Aspartic Acid - 4.77g
Glutamic Acid - 8.66g
Glycine - 3.26g
Proline - 2.44g
Serine - 2.54g

MINERALS

calcium - 3.63g
magnesium - 0.15g
ca:ph ratio - 1.25:1
sodium - 0.60g
selenium - 0.13mg
phosphorus - 2.32g
potassium - 1.57
manganese - 1.58mg
zinc - 20.75mg
copper - 3.52mg
iodine - 2.50mg
iron - 16.79mg
purines - 254mg

DIETARY ANALYSIS

raw milk recipe ingredients & GA's

GOATnog	TEXsauce	Tummy Butter Kefir	Better Butter Tea
cultured raw grass fed goat milk, fermented pastured duck eggs (no shell), raw local honey, organic cinnamon	cultured raw grass fed goat milk, organic fermented turmeric, organic fermented ginger	kefir cultured raw grass fed goat milk, raw grass fed goat milk butter, organic earth-kosher peppermint, organic earth-kosher chicory, organic earth-kosher aloe leaf, organic fermented ginger	cultured raw grass fed goat milk, raw grass fed goat milk butter, organic earth-kosher parsley, organic earth-kosher dandelion root, organic earth-kosher yucca schidigera
protein: ~4% fat: ~4% fiber: ~0.20% carbohydrates: ~4% moisture: ~86% ash: ~1% kcals per oz: ~ 21	protein: ~4% fat: ~4% fiber: ~0.13% carbohydrates: ~4% moisture: ~86% ash: ~1% kcals per oz: ~20	protein: ~4% fat: ~6% fiber: ~0.08% carbohydrates: ~4% moisture: ~86% ash: ~1% kcals per oz: ~25	protein: ~4% fat: ~6% fiber: ~0.05% carbohydrates: ~4% moisture: ~86% ash: ~1% kcals per oz: ~25

Our diets are formulated to meet or exceed these values per 1000 kcals

DIETARY ANALYSIS

GOATnog - raw goat milk & duck egg blend

FATS

monounsaturated fatty acids - 16.2g
polyunsaturated fatty acids - 2.72g
linoleic acid (18:2, n-6) - 1.9g
alpha-linoleic acid (18:3, n-3) - 0.59g
arachidonic acid (20:4, n-6)- 0.03g
eicosapentaenoic acid (20:5, n-6) - 0.002g
docosapentaenoic acid (20:5, n-6) - 0.004g
docosahexaenoic acid (20:4, n-6) - 0.035g
stearidonic acid (20:5, n-6) - 0.00g
eicosadienoic acid (20:4, n-6) - 0.025g
Omega 3 Fatty Acids - 0.63g
Omega 6 Fatty Acids - 1.96g
Omega 6:Omega 3 ratio - 3.13:1

VITAMINS

vitamin A - 2,846iu
vitamin C - 17.7mg
vitamin D - 445iu
vitamin E - 39iu
vitamin K - 4.51mg
thiamine (vitamin B1) - 0.88mg
riboflavin (vitamin B2) - 5.60mg
niacin (vitamin B3) - 4.30
pyridoxine (vitamin B6) - 0.88mg
folate (vitamin B9) - 0.07mg
vitamin B12 - 0.007mg
pantothenic acid (vitamin B5) - 7.04mg
choline - 408.7mg
biotin (vitamin B7) - 0.007mg

AMINO ACIDS

tryptophan - 0.74g
threonine - 2.71g
isoleucine - 3.29g
leucine - 5.06g
lysine - 4.61g
methionine - 1.31g
cystine + methionine - 2.13g
taurine - 26.84mg
phenylalanine - 2.48g
tyrosine + phenylalanine - 5.19g
valine - 3.79g
arginine - 2.06g
histidine - 1.39g
alanine - 2.11g
aspartic acid - 3.84g
glutamic acid - 9.83g
glycine - 0.95g
proline - 5.630g
serine - 3.04g

MINERALS

calcium - 2.11g
magnesium - 0.26g
ca:p ratio - 1.1:1
sodium - 1.18g
selenium - 0.38mg
phosphorus - 1.92g
potassium - 2.78g
manganese - 0.76mg
zinc - 5.27mg
copper - 0.45mg
iodine - 0.82mg
iron - 80.21mg

DIETARY ANALYSIS

TEXsauce - raw goat milk with turmeric & ginger blend

FATS

monounsaturated fatty acids - 16.2g
polyunsaturated fatty acids - 2.72g
linoleic acid (18:2, n-6) - 1.90g
alpha-linoleic acid (18:3, n-3) - 0.59g
arachidonic acid (20:4, n-6)- 0.03g
eicosapentaenoic acid (20:5, n-6) - 0.002g
docosapentaenoic acid (20:5, n-6) - 0.004g
docosahexaenoic acid (20:4, n-6) - 0.035g
stearidonic acid (20:5, n-6) - 0.00g
eicosadienoic acid (20:4, n-6) - 0.025g
Omega 3 Fatty Acids - 0.63g
Omega 6 Fatty Acids - 1.96g
Omega 6:Omega 3 ratio - 3.13:1

VITAMINS

vitamin A - 2,716iu
vitamin C - 18.60mg
vitamin D - 410iu
vitamin E - 9.00iu
vitamin K - 5.20mg
thiamine (vitamin B1) - 0.96mg
riboflavin (vitamin B2) - 2.84mg
niacin (vitamin B3) - 4.50mg
pyridoxine (vitamin B6) - 0.90mg
folate (vitamin B9) - 0.02mg
vitamin B12 - 0.002mg
pantothenic acid (vitamin B5) - 6.71mg
choline - 319.10mg
biotin (vitamin B7) - 0.004mg

AMINO ACIDS

tryptophan - 0.70g
threonine - 2.60g
isoleucine - 3.17g
leucine - 4.86g
lysine - 4.43g
methionine - 1.21g
cystine + methionine - 1.96g
taurine - 26.79mg
phenylalanine - 2.33g
tyrosine + phenylalanine - 4.96g
valine - 3.63g
arginine - 1.83g
histidine - 1.33g
alanine - 1.89g
aspartic acid - 3.57g
glutamic acid - 9.60g
glycine - 0.84g
proline - 5.40g
serine - 2.76g

MINERALS

calcium - 2.18g
magnesium - 0.26g
ca:p ratio - 1.13:1
sodium - 1.15g
selenium - 0.05mg
phosphorus - 1.94g
potassium - 3.03g
manganese - 2.31mg
zinc - 5.31mg
copper - 0.55mg
iodine - 0.76mg
iron - 6.26mg

DIETARY ANALYSIS

tummy butter kefir - raw goat kefir & herbal tea blend

FATS

monounsaturated fatty acids - 18.5g
polyunsaturated fatty acids - 2.44g
linoleic acid (18:2, n-6) - 1.80g
alpha-linoleic acid (18:3, n-3) - 0.45g
arachidonic acid (20:4, n-6)- 0.01g
eicosapentaenoic acid (20:5, n-6) - 0.002g
docosapentaenoic acid (20:5, n-6) - 0.004g
docosahexaenoic acid (20:4, n-6) - 0.033g
stearidonic acid (20:5, n-6) - 0.00g
eicosadienoic acid (20:4, n-6) - 0.025g
Omega 3 Fatty Acids - 0.45g
Omega 6 Fatty Acids - 1.80g
Omega 6:Omega 3 ratio - 4.04:1

VITAMINS

vitamin A - 3,079iu
vitamin C - 15.7mg
vitamin D - 366iu
vitamin E - 13.20iu
vitamin K - 3.20mg
thiamine (vitamin B1) - 0.68mg
riboflavin (vitamin B2) - 4.35mg
niacin (vitamin B3) - 3.43mg
pyridoxine (vitamin B6) - 0.69mg
folate (vitamin B9) - 0.02mg
vitamin B12 - 0.01mg
pantothenic acid (vitamin B5) - 5.18mg
choline - 294.6mg
biotin (vitamin B7) - 0.001mg

AMINO ACIDS

tryptophan - 0.54g
threonine - 2.01g
isoleucine - 2.54g
leucine - 3.75g
lysine - 3.44g
methionine - 0.93g
cystine + methionine - 1.51g
taurine - 19.75mg
phenylalanine - 1.80g
tyrosine + phenylalanine - 3.83g
valine - 2.80g
arginine - 1.40g
histidine - 1.03g
alanine - 1.47g
aspartic acid - 2.67g
glutamic acid - 7.44g
glycine - 0.64g
proline - 4.18g
serine - 2.14g

MINERALS

calcium - 1.70g
magnesium - 0.21g
ca:p ratio - 1.14:1
sodium - 0.89g
selenium - 0.30mg
phosphorus - 1.50g
potassium - 2.20g
manganese - 0.83mg
zinc - 3.91mg
copper - 0.36mg
iodine - 0.59mg
iron - 1.74mg

DIETARY ANALYSIS

better butter tea - raw goat milk & detox tea blend

FATS

monounsaturated fatty acids - 18.5g
polyunsaturated fatty acids - 2.45g
linoleic acid (18:2, n-6) - 1.82g
alpha-linoleic acid (18:3, n-3) - 0.44g
arachidonic acid (20:4, n-6)- 0.01g
eicosapentaenoic acid (20:5, n-6) - 0.002g
docosapentaenoic acid (20:5, n-6) - 0.004g
docosahexaenoic acid (20:4, n-6) - 0.033g
stearidonic acid (20:5, n-6) - 0.00g
eicosadienoic acid (20:4, n-6) - 0.025g
Omega 3 Fatty Acids - 0.44g
Omega 6 Fatty Acids - 1.82g
Omega 6:Omega 3 ratio - 4.1:1

VITAMINS

vitamin A - 3,344iu
vitamin C - 16.9mg
vitamin D - 366iu
vitamin E - 15.8iu
vitamin K - 47.6mg
thiamine (vitamin B1) - 0.69mg
riboflavin (vitamin B2) - 4.38mg
niacin (vitamin B3) - 3.48mg
pyridoxine (vitamin B6) - 0.70mg
folate (vitamin B9) - 0.02mg
vitamin B12 - 0.01mg
pantothenic acid (vitamin B5) - 5.20mg
choline - 252.5mg
biotin (vitamin B7) - 0.001mg

AMINO ACIDS

tryptophan - 0.54g
threonine - 2.02g
isoleucine - 2.46g
leucine - 3.76g
lysine - 3.45g
methionine - 0.94g
cystine + methionine - 1.52g
taurine - 19.78mg
phenylalanine - 1.80g
tyrosine + phenylalanine - 3.84g
valine - 2.81g
arginine - 1.47g
histidine - 1.03g
alanine - 1.47g
aspartic Acid - 2.69g
glutamic Acid - 7.46g
glycine - 0.64g
proline - 4.19g
serine - 2.15g

MINERALS

calcium - 1.71g
magnesium - 0.21g
ca:p ratio - 1.14:1
sodium - 0.90g
selenium - 0.29mg
phosphorus - 1.50g
potassium - 2.23g
manganese - 0.67mg
zinc - 3.91mg
copper - 0.36mg
iodine - 0.59mg
iron - 1.71mg

DIETARY ANALYSIS

co-factors and relationships

AMINO ACIDS

Protein is essential for the body's structure and function, serving as the building blocks for tissues, enzymes, hormones, and antibodies. Without an adequate intake of protein, the body cannot repair or maintain its cells, leading to muscle wasting, weakened immune function, impaired organ function, and ultimately, death. Additionally, proteins play a crucial role in various biochemical processes, such as metabolism and nutrient transportation, making them indispensable for overall health and survival. It is important to note that synthetic amino acids, particularly when taken in isolation, can disrupt the balance of amino acids in the body. Excessive intake of certain amino acids may compete with others for absorption, leading to imbalances and potential deficiencies in essential amino acids. Excessive intake of certain amino acids can overload the liver and kidneys, leading to metabolic imbalances and organ damage over time. The lack of co-factors and co-nutrients in proper ratios increases the risk of damage to the body from the use of synthetic, isolate amino acids.

ESSENTIAL AMINO ACIDS

Essential amino acids are dependent on B-Vitamins (particularly B6), Iron, Zinc, Vitamin C, and Copper. Additionally, Sodium allows amino acids into the cells. Non-essential amino acids require B-Vitamins, Magnesium, Manganese, and Vitamin C to metabolize amino acids and synthesize collagen and other proteins.

tryptophan: dependent on vitamin B6, iron, magnesium, and zinc. If these are deficient or out of balance, the body may not properly utilize tryptophan to make serotonin, melatonin, 5-HTP, or other nutrients in the tryptophan cycle. This is the only amino acid that is known to be carcinogenic (can produce kynurenine and quinolinic acid), meaning it can contribute to cancer. Low tryptophan intake is ideal for most pets. Tryptophan utilization is disrupted by glyphosate.

threonine: dependent on vitamin B6, iron, magnesium, and zinc. If these are deficient or out of balance, the body may not properly utilize threonine for protein synthesis, collagen formation, or immune function.

isoleucine: dependent on vitamin B6, iron, magnesium, zinc, leucine, and valine. If these are deficient or out of balance, the body may not properly utilize isoleucine for protein synthesis, energy production, or muscle function.

leucine: dependent on vitamin B6, iron, magnesium, zinc, leucine, and valine. If these are deficient or out of balance, the body may not properly utilize leucine for protein synthesis, blood sugar regulation, or energy production. This branched-chain amino acid can be used by the body in lieu of most other amino acids, should it be necessary.

lysine: dependent on vitamin B6, iron, zinc, and vitamin C. If these are deficient or out of balance, the body may not properly utilize lysine for protein synthesis, collagen formation, or calcium absorption.

methionine: dependent on vitamin B6, vitamin B12, folate, magnesium, and zinc. If these are deficient or out of balance, the body may not properly utilize methionine for protein synthesis, antioxidant activity (it is a precursor of glutathione, which neutralizes free-radicals and ROS (reactive oxygen species) and detoxification. Excessive or unbalanced intake can lead to cardiovascular disease.

DIETARY ANALYSIS

co-factors and relationships

cystine + methionine: cystine is dependent on methionine, vitamin B6, iron, and zinc. After methionine is converted to homocysteine, cysteine helps turn it into cystine which supports heme synthesis. If these are deficient or out of balance, the body may not properly utilize it for its antioxidant properties (it is a precursor of glutathione), detoxification, or collagen formation. Some genetic disorders and metabolic conditions can use cystine to form kidney stones.

taurine: dependent on cystine, methionine, vitamin B6, zinc, and magnesium. If these are deficient or out of balance, the body may not properly utilize taurine for heart health (blood pressure and rhythm), neurological function, antioxidant activity, or eye heath.

tyrosine + pheylalanine: dependent on phenylalanine, vitamin B6, iron and zinc. If these are deficient or out of balance the body may not properly utilize tyrosine for neurotransmitter synthesis, thyroid hormone production, or melanin synthesis.

valine: dependent on vitamin B6, magnesium, zinc, iron, leucine, and isoleucine. If these are deficient or out of balance, the body may not properly utilize valine for muscle protein synthesis, energy production, or blood sugar regulation.

arginine: dependent on ornithine, citrulline, vitamin B6, zinc, and iron. If these are deficient or out of balance, the body may not utilize arginine for nitric oxide production, immune function, protein synthesis, or detoxification of ammonia into urea for excretion.

histidine: dependent on vitamin B6, iron, zinc , and copper. If these are deficient or out of balance, the body may not properly utilize histidine for heavy metal chelation, maintaining pH balance, or as a precursor to histamine.

alanine: dependent on pyruvate, glucose, vitamin B6, isoleucine, leucine, and valine. If these are deficient or out of ratio, the body may not properly utilize alanine for energy production, muscle growth, and repair, immune function (antibodies and cytokines) or neurotransmission.

glutamic acid: dependent on alpha-ketoglutarate, GABA (gamma-aminobutyric acid), and vitamin B6. If these are deficient or out of ratio, the body may not properly utilize glutamic acid for neurotransmission, metabolism, or energy production, protein synthesis, or ammonia detoxification from the urinary tract.

glycine: dependent on serine (serine hydroxymethyltransferase), creatine, and glutathione. If these are deficient or out of ratio, the body may not properly utilize glycine for protein synthesis, neurotransmission, detoxification of heavy metal/free radicals, or collagen formation.

proline: dependent on glycine, vitamin C, and glutathione. If these are deficient our out of balance, the body may not utilize proline for collagen synthesis, wound healing, antioxidant defense, or muscle function.

serine: dependent on cysteine. If cysteine (or nutrients that cystine is dependent on) is deficient, the body may not properly utilize serine for one-carbon metabolism, collagen production, joint and bone health, cardiovascular health, or antioxidant properties.

DIETARY ANALYSIS

co-factors and relationships

VITAMINS

Vitamins are vital micronutrients that regulate numerous physiological processes in the body, such as metabolism, immune function, and cell repair. Without sufficient vitamin intake, essential biochemical reactions would be impaired, leading to a cascade of health issues ranging from compromised immune function to impaired vision and neurological disorders. Inadequate vitamin levels can result in deficiencies that contribute to a weakened immune system, increased susceptibility to infections, and a higher risk of chronic diseases. Ultimately, without adequate vitamin intake, the body's ability to maintain optimal health and function is compromised, potentially leading to severe health consequences and even death.

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vitamin A: dependent on zinc, RBP (retinol binding protein), dietary fat, and protein. It influences calcium and potassium. If these are deficient or out of ratio, Vitamin A may not be able to properly support vision, immune function (including T cell, B cell, and macrophage production), skin health, or reproductive/hormone health.

vitamin C: influences the absorption of iron/ferric iron/ferrous iron, glutathione synthesis, chromium, and hypothalamus health. If these are deficient or out of ratio, the body may not effectively utilize Vitamin C as an antioxidant, for collagen synthesis, would healing, or immune function.

vitamin D: imperative for proper metabolism of calcium, magnesium, phosphorus, PTH (parathyroid hormone) – which can affect sodium and potassium. If Vitamin D is deficient, it can impair calcitriol (a hormone that impacts the liver and kidneys), cause bone remodeling, impair immune function, alter muscle function and integrity, prevent proper cellular metabolism (potentially contributing to cancer), and inhibit thyroid function.

vitamin E: depends on selenium and works in tandem with Vitamin C. If it is deficient, the body may not utilize it to protect the body from damage caused by polyunsaturated fatty acids or LDL cholesterol oxidation. Vitamin E functions as an antioxidant, modulates immune function/cytokine productions, repairs skin, and supports heart health.

vitamin K: influences the body's use of calcium and prevents the calcification of soft tissues (especially the heart). It's necessary for the synthesis and activation of clotting factors in the liver, promotes bone/heart health, and moderates cellular metabolism.

thiamine (vitamin B1): dependent on magnesium and riboflavin (B2). It is essential for the metabolism of carbohydrates, BCAAs (leucine, isoleucine, valine), energy metabolism, nervous system function (including acetylcholine, GABA and glutamate), cardiovascular health, and digestive health.

riboflavin (vitamin B2): allows niacin to be converted into nicotinic acid, pyridoxine to be converted into PLP, folate to be converted into 5-MTHF, and ferric iron to be converted into ferrous iron. It plays a key role in energy production, antioxidant defenses, vision, and maintenance of mucous membranes.

pyridoxine (vitamin B6): depends on riboflavin, folate, magnesium, and zinc. It plays an integral role in amino acid metabolism, neurotransmitter synthesis, heme-iron synthesis, and glycogen metabolism.

DIETARY ANALYSIS

co-factors and relationships

folate (vitamin B9): dependent on vitamin B12, vitamin B6, vitamin B2, and choline. Folate cannot be methylated into its active form (methyl tetrahydrofolate) without these nutrients in their proper ratios. Folate is involved in DNA synthesis and repair, homocysteine metabolism (reduction of inflammation), cellular metabolism, and neurological function.

vitamin B12: dependent on folate, vitamin B6, vitamin B2, iron and it influences the absorption and utilization of cobalt, sulfur, and phosphorus. It plays a critical role in red blood cell formation, neurological functions, DNA synthesis and methylation, and energy metabolism.

pantothenic acid (vitamin B5): dependent on biotin, magnesium, and cystine. Vitamin B5 gets converted into Coenzyme A (CoA) which is required for the synthesis of heme-iron and energy metabolism, synthesis of fatty acids, steroid hormones, and acetylcholine.

choline: dependent on vitamins B6, B9, B12, B2, and methionine. Choline is converted to betaine when methionine serves as a methyl group donor, which then reduces homocysteine. Deficiency can lead to fatty liver disease and poor lipid metabolism, deficiencies of methyl groups, vitamin B12, phosphatidylcholine, acetylcholine, and impaired methionine synthesis.

biotin (vitamin B7): dependent on vitamin B5 and cysteine. Biotin influences lysine and iron metabolism. Biotin plays a role in the metabolism of carbohydrates, fats, and proteins, the synthesis of fatty acids, gluconeogenesis, and the maintenance of healthy hair, skin, and nails.

niacin (vitamin B3): can be synthesized from tryptophan. It depends on riboflavin for its conversion to NAD (nicotinamide adenine dinucleotide) and NADP (nicotinamide adenine dinucleotide phosphate), and B6. It is involved in the synthesis of heme (the iron-containing component of blood/enzymes). It participates in energy metabolism, DNA repair and synthesis, cholesterol/lipid metabolism, and antioxidant defenses.

DIETARY ANALYSIS

co-factors and relationships

MINERALS

Minerals are essential nutrients that play crucial roles in various physiological functions, including bone health, fluid balance, nerve function, and enzyme activation. Without sufficient mineral intake, the body's ability to regulate these processes would be compromised, leading to a range of health issues. For example, calcium deficiency can weaken bones and increase the risk of fractures, while potassium deficiency can disrupt heart rhythm and muscle function. Similarly, inadequate intake of iron can lead to anemia, impairing oxygen transport and energy production. Overall, minerals are indispensable for maintaining overall health and vitality, and their deficiency or toxicity can have serious consequences, potentially leading to organ dysfunction and even death.

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calcium: dependent on magnesium, phosphorus, vitamin A, vitamin D, and vitamin K for proper metabolism and use. It participates in bone, muscle, blood, nerve, pH, urinary, and hormone health. There are 6 types of calcium that the body needs to function properly: calcium carbonate, calcium citrate, calcium phosphate, calcium gluconate, calcium lactate, and calcium orotate. If an isolate source of calcium is provided, the body may absorb suboptimal levels of calcium, despite "adequate" contributions, resulting in deficiencies and imbalances which may negatively impact hormones and contribute to multiple health problems.

iron: influences the absorption of iron/ferric iron/ferrous iron, glutathione synthesis, chromium, and hypothalamus health. If these are deficient or out of ratio, the body may not effectively utilize Vitamin C as an antioxidant, for collagen synthesis, would healing, or immune function. There are two types of dietary iron: heme iron (from animal based sources), and non-heme iron (from plant based sources). The body only uses heme iron in blood. Supplemental forms of iron that provide little to no value to health included ferrous sulfate, ferric iron, iron salts, iron oxide, and iron pyrophosphate.

magnesium: dependent on calcium, vitamin D and B6, and potassium. Magnesium is required for the activation of vitamin D in the liver and kidneys. It's involved in muscle function, energy metabolism, brain/nerve health. Synthetic isolate sources of magnesium may cause the body to absorb suboptimal levels of it, despite "adequate" contributions, resulting in deficiencies and imbalances.

phosphorus: dependent on calcium, magnesium, sulfur, and vitamins D and B6. Phosphorus and calcium work together to form beneficial hydroxyapatite crystals in bones and teeth. It's imperative for the health of the bones & teeth, cellular structure and function (it is a structural component of all cell membranes, phospholipids, DNA, and RNA), energy metabolism, and acid-base balance. Synthetic isolate sources of phosphorus may cause the body to retain excessive amounts of a type of phosphorus that it does not need while maintaining a deficiency of a type that it needs for cellular metabolism.

calcium:phosphorous ratio: when calcium and potassium are not provided in an appropriate ratio, damage can occur to the bones, blood, minerals, hormones, kidneys, and body (heart, nerves, immune system).

potassium: dependent on sodium, magnesium, chloride, and vitamin B6. It helps regulate electrolytes, supports heart health, ensures proper muscle function, supports nerve function, kidney function, and bone health. Imbalances can cause a multitude of health issues including kidney damage, appetite loss, and digestive upset.

DIETARY ANALYSIS

co-factors and relationships

sodium: dependent on potassium, chlorides, and water. Sodium imbalances can result in imbalanced fluids/blood osmosis, dehydration, poor blood pressure regulation, headaches, muscle spasms, pH imbalances. There is no suggested maximum for Sodium in pet food. Excessive use may upset the delicate sodium:potassium balance, which can negatively impact cellular osmosis resulting in severe digestive and respiratory consequences.

zinc: dependent on iron, vitamin A, vitamin B6, copper, and protein. Zinc is necessary for proper immune function, wound healing, antioxidant defenses, gene expression, neurological function, etc. Synthetic zinc supplements can potentially cause GI distress and/or rashes. If methylated B6 is not provided and liver function is not optimal, zinc (in any form) may not be properly absorbed or utilized.

copper: dependent on zinc, molybdenum, iron, and vitamin C. Copper is imperative for the production of antioxidant enzymes such as SOD (superoxide dismutase) and ceruloplasmin, iron metabolism, connective tissue formation, neurological function, immune system support, and energy metabolism. Synthetic copper supplements may include copper oxide or copper amino acid chelates, which are associated with poor absorption, negative interactions with medications or other nutrients and potential toxicity.

manganese: dependent on copper, iron, vitamin C, biotin, sulfur, and phosphorus. It functions as an antioxidant, supports bone health, cartilage formation, glucose metabolism, neurological function, and wound healing. Manganese is minimally present in animal-based products. Vet, HTMA data analysis has identified that manganese deficiency is extremely rare, regardless of the type of diet fed.

selenium: dependent on vitamins E & C, zinc and sulfur. It is essential for the synthesis of thyroid hormones, which influences calcium, vitamin D, chromium, it functions as an antioxidant, thyroid and immune support, supports cognitive function, and cardiovascular health.

iodine: dependent on tyrosine, selenium, iron, and vitamin A. It's a primary component of thyroid hormones and helps regulate metabolism. It supports brain development, reproductive health, energy production, and immune function. Synthetic iodine can lead to thyroid dysfunction and severe heart arrhythmias. It may negatively interact with medications or supplements and may lack co-factors and co-nutrients necessary for proper iodine metabolism.

purines: purines are precursors for DNA and RNA synthesis, energy metabolism, and signaling molecules (ATP & GTP). They can cause increased levels of uric acid, which can cause kidney stones, gout, and metabolic syndrome.

DIETARY ANALYSIS

synthetic sources of nutrients

AMINO ACIDS

methionine: Many pet foods use synthetic DL-Methionine instead of meat protein to reduce production costs. The synthetic forms interactions with folate, magnesium, and zinc are still not fully researched.

taurine: Synthetic taurine may interact with blood pressure or neurological function medications.

tyrosine + pheylalanine: Synthetic tyrosine may interact with neurological function and thyroid medications. Disrupted by glyphosate exposure.

arginine: Synthetic supplementation can cause hypotension.

histidine: Synthetic supplementation of histidine can lead to elevated histamine levels. (There is no established value for "low" histidine).

VITAMINS

vitamin D: Synthetic supplementation of vitamin D in pet foods is a primary cause of recalls that resulted in illnesses and deaths of pets. Whole food sources of vitamin D are statistically safer than isolate forms.

vitamin E: Supplemental vitamin E is often sourced from GMO, pesticide-ridden soy that is preserved with propylene glycol or nut-based oils that are high PUFA/linoleic acids that are known to be highly inflammatory.

vitamin K: Synthetic supplementation can interfere with anticoagulant medications, cause hemolytic anemia, contribute to seizures, or cause allergic reactions.

pyridoxine (vitamin B6): In synthetic form, pyridoxine may not be properly methylated in the liver. Deficiencies of methylated b vitamins can cause neurological issues, mood disorders, cardiovascular disease, birth defects, anemia, impaired DNA synthesis and repair, increased inflammation, hormone imbalances, and digestive issues.

folate (vitamin B9): In synthetic form, folate may not be properly methylated in the liver. Deficiencies of methylated b vitamins can cause neurological issues, mood disorders, cardiovascular disease, birth defects, anemia, impaired DNA synthesis and repair, increased inflammation, hormone imbalances, and digestive issues.

vitamin B12: In synthetic form, vitamin B12 may not be properly methylated in the liver. Deficiencies of methylated b vitamins can cause neurological issues, mood disorders, cardiovascular disease, birth defects, anemia, impaired DNA synthesis and repair, increased inflammation, hormone imbalances, and digestive issues.

DIETARY ANALYSIS

heavy metal contamination of synthetic minerals

MINERALS

calcium: Supplemental calcium is typically contaminated with arsenic (2-5ppm), lead (5-30ppm), mercury (0.05ppm), and cadmium (5-10ppm) (AAFCO OP chart)

iron: Supplemental iron is typically contaminated with arsenic (1-50ppm), lead (1-90ppm) and mercury (1ppm) (AAFCO OP chart)

magnesium: Supplemental magnesium is typically contaminated with arsenic (1-10ppm), Lead (1-20ppm), mercury (0.1-5ppm), cadmium (1ppm)

phosphorus: Supplemental phosphorus is typically contaminated with arsenic (2-5ppm), lead (5-30ppm), mercury (0.05ppm), and cadmium (5-10ppm)

potassium: Supplemental potassium is typically contaminated with arsenic (1ppm), lead (1ppm), and mercury (1ppm)

zinc: Supplemental zinc is typically contaminated with arsenic (10-800ppm), lead (100-2,000ppm), mercury (1ppm), cadmium (80-500ppm), and antinomy (10ppm)

copper: Supplemental copper is typically contaminated with arsenic (3-100ppm), lead (9-600ppm), mercury (1ppm), cadmium (2-100ppm), nickel (100ppm), and antimony (0-20ppm)

manganese: Supplemental manganese is typically contaminated with arsenic (2-100ppm), Lead (1-90ppm), cadmium (1-20ppm), and antimony (70-200ppm)

selenium: Supplemental selenium is typically contaminated with mercury (10-1,000ppm), cadmium (1-5ppm), and nickel (1-5ppm)

iodine: Supplemental iodine is typically contaminated with arsenic (2ppm), lead (3ppm), mercury (2ppm), cadmium (1ppm)

Solutions Pet Products will not use synthetic, isolate minerals to attain regulatory minimums. If synthetically supplemented food contains the average levels of each mineral tested by KYPF, and each mineral were contaminated with the average "typical contamination" level of heavy metal stated by AAFCO and diluted according to the AAFCO recommendations, the food would contain:

Arsenic - 7,939ppm (safe levels of arsenic are <25.5ppm) - *The Mineral Tolerance of Animals publication states that arsenic can cause excessive growth in puppies and kittens. Could it be that excessive growth and bone problems in large breed pets is not due to "high protein" or calcium, but instead is due to arsenic contamination on synthetic mineral supplements?*
Lead - 21,259ppm (safe levels of lead are <45.5ppm)
Mercury - 35ppm (safe levels of mercury are <1ppm)
Cadmium - 12,192ppm (safe levels of cadmium are <1ppm)
Nickel - 0.03ppm (no commonly stated maximum)
Antimony - 1.8ppm (safe levels of antimony are <10ppm)