

InnovaConsult



National Pork Institute
Fat types Report
Nov 2023 - jan 2024

When Innovation and Flavour is a Passion

Understanding fat flavor differences between pork and other animal/plant fats

- Descriptive profiles (incl. Overview of flavor compounds and creation of vocabulary) of 8 types of fat
 - ▣ Fat types: Pork – fat from high fat meat and low fat meat, Beef - fat from high fat meat and low fat meat , Duck, Butter, Canola/Rape seed, Olive
- Placing of the various fat types in a Fat Flavor Map
- Creation of Fat Tasting Wheel, based primarily on the nuances found in the samples

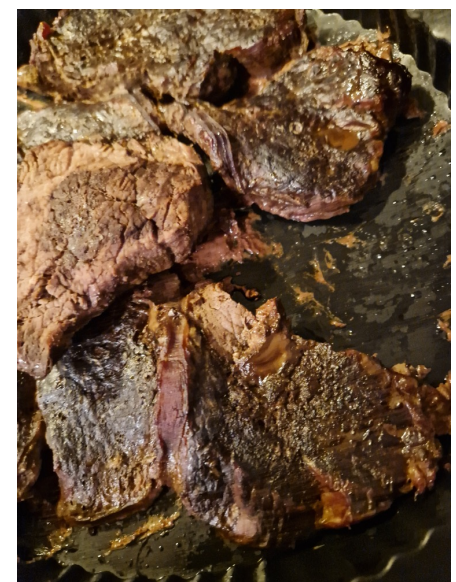
Overview of Fat samples tested

No.	Sample
1	Olive oil (conventional)
2	Canola/Rape seed oil (conventional)
3	Butter (un-salted, conventional)
4	Fat from High-fat Pork (belly)
5	Fat from Low-fat Pork (tenderloin)
6	Bacon fat from Pork
7	Fat from High-fat Beef (ribeye)
8	Fat from Low-fat Beef (tenderloin)

Fat Samples 1 to 8



Fat Samples 1 to 8



Sensory Descriptive Profile

Sample 1, Olive oil

Scent: Fresh, green, newly-mown lawn, hint of citrus, a little acidic, fat, green apple, green banana, a little cucumber, green leaves

Flavour: Bitter, sharp, green, vegetable fat, slightly acidic, , a little green apple peel, a little unripe banana

Texture/Mouthfeel: Fat, oily, coating, "scratches in the throat"

Visual appearance: Yellowish with a faint green nuance, viscous liquid

Sensory Descriptive Profile

Sample 2, Canola/Rape seed oil

Scent: Nutty, full/rich, intense, slightly cabbage, slightly wood, vegetable fat, roast hazelnut

Flavour: Nutty, hazelnut, slightly cabbage, vegetable fat, slightly hay

Texture/Mouthfeel: Fat, coating, viscous

Visual appearance: Viscous liquid, very intense warm orange-yellow

Sensory Descriptive Profile

Sample 3, Butter

Scent: Acidic-sweet, slightly pungent, slightly rhubarb, fresh, butter, slightly fruit, slightly vanilla, fat, slightly apricot

Flavour: Butter, acidic-sweet, rich, kokumi, mild, harmonious, sweet, a little warm milk, slightly vanilla, cream, fat, fresh, slightly floral, slightly fruit

Texture/Mouthfeel: Melts on the tongue, cooling, fat, mouthwatering

Visual appearance: Very light pale yellow, matte surface, solid block

Sensory Descriptive Profile

Sample 4, Fat from High-fat Pork

Scent: Pork fat, rich, harmonious, a little meaty, a little nutty, roast pork, a little umami, more fat than sample 5

Flavour: Fat, slightly acidic, a little pork, rich, kokumi, a little umami, a little nutty/roasted hazelnut, tallow, slightly pork broth

Texture/Mouthfeel: Soft, creamy, melts on the tongue, fat, a little coating, a little mouthwatering

Visual appearance: Solid and creamy, off-white, homogeneous colour and texture

Sensory Descriptive Profile

Sample 5, Fat from Low-fat Pork

Scent: More sharp and acidic than sample 4. A little acidic, a little sharp, fat, boiled meat, slightly pork broth, a little mushroom, slightly barnyard, a little yeast extract

Flavour: Acidic, more intense than sample 4, boiled pork, pork broth, umami, yeast extract, ovenbaked portobello mushrooms, pork fat, rich, kokumi, hazelnut, tallow

Texture/Mouthfeel: Creamy, soft, melts on the tongue, not coating, a little mouthwatering

Visual appearance: White as snow, solid, homogeneous colour and texture

Sensory Descriptive Profile

Sample 6, Bacon fat from Pork

Scent: Fried bacon, intense, a little smoke, a little acidic, umami, a little sweet, smoked meat, roasted meat, fat, tallow

Flavour: Intense fat, fried bacon, umami, salt, smoked meat, fat, roast pork, tallow, grilled meat, a little smoke

Texture/Mouthfeel: Very soft and creamy, melts extremely fast on the tongue, fat, coating

Visual appearance: Off-white/beige, solid and creamy, homogeneous colour and texture

Sensory Descriptive Profile

Sample 7, Fat from High-fat Beef

Scent: Mild, harmonious, fat, a little beef, slightly beef broth, slightly umami, slightly acidic, a little nut, a little baked potato, tallow, a little sweet, slightly floral, a little baked mushroom

Flavour: Fat, mild, slightly acidic, a little boiled beef, a little umami, rich, a little kokumi, a little beef broth, a little baked potato, tallow, slightly cream, slightly mushroom

Texture/Mouthfeel: Very fat, very coating, melts on the tongue

Visual appearance: Solid, yellow-white, homogeneous colour and texture

Sensory Descriptive Profile

Sample 8, Fat from Low-fat Beef

Scent: More intense than sample 7, more rich and kokumi than sample 7, more fat and less acidic than sample 7, roasted nut, harmonious, beef broth, rich, kokumi, beef, slightly floral, slightly leather, slightly ovenbaked mushrooms, slightly baked potato, slightly peanut butter, tallow

Flavour: Beef, fat, a little acidic, a little mushroom, umami, rich, kokumi, beef broth, harmonious, slightly fruit, a little sweet, roasted nut, a little baked potato, tallow, a little walnut

Texture/Mouthfeel: Grainy/sandy, melts extremely fast on the tongue, fat, mouthwatering, slightly coating, "scratches a bit in the throat"

Visual appearance: Solid, yellow-white with a beige tone, a little more intensely coloured than sample 7, homogeneous colour and texture

64 fat descriptors; All samples

acidic	cucumber	kokumi	roast hazelnut
Acidic-sweet	fat	leather	roast meat
apricot	floral	Meat	roast pork
baked mushroom	Fresh	mild	salt
baked potato	Fried bacon	mushroom	Sharp
barnyard	Fruit	newly-mown lawn	Smoke
beef	Green	Nutty	smoked meat
beef broth	green apple	ovenbaked mushrooms	sweet
Bitter	green apple peel	ovenbaked portobello mushrooms	tallow
boiled beef	green banana	peanut butter	umami
boiled meat	green leaves	pork	unripe banana
boiled pork	grilled meat	pork broth	Vanilla
Butter	harmonious	Pork fat	vegetable fat
Cabbage	hay	Pungent	walnut
citrus	hazelnut	Rhubarb	warm milk
cream	Intense	Rich	Wood
			yeast extract

64 fat descriptors; Pork

acidic

barnyard

boiled meat

boiled pork

fat

Fried bacon

grilled meat

harmonious

hazelnut

Intense

kokumi

Meat

mushroom

Nutty

ovenbaked portobello

mushrooms

pork

pork broth

Pork fat

Rich

roast hazelnut

roast meat

roast pork

salt

Sharp

Smoke

smoked meat

sweet

tallow

umami

yeast extract

64 fat descriptors; Pork

Nuts and Mushrooms:

Hazelnut
roast hazelnut
mushroom
Nutty
ovenbaked
portobello
mushrooms

Meat:

Meat
pork
pork broth
Pork fat
boiled meat
boiled pork
Fried bacon
grilled meat
roast meat
roast pork
smoked meat

Other:

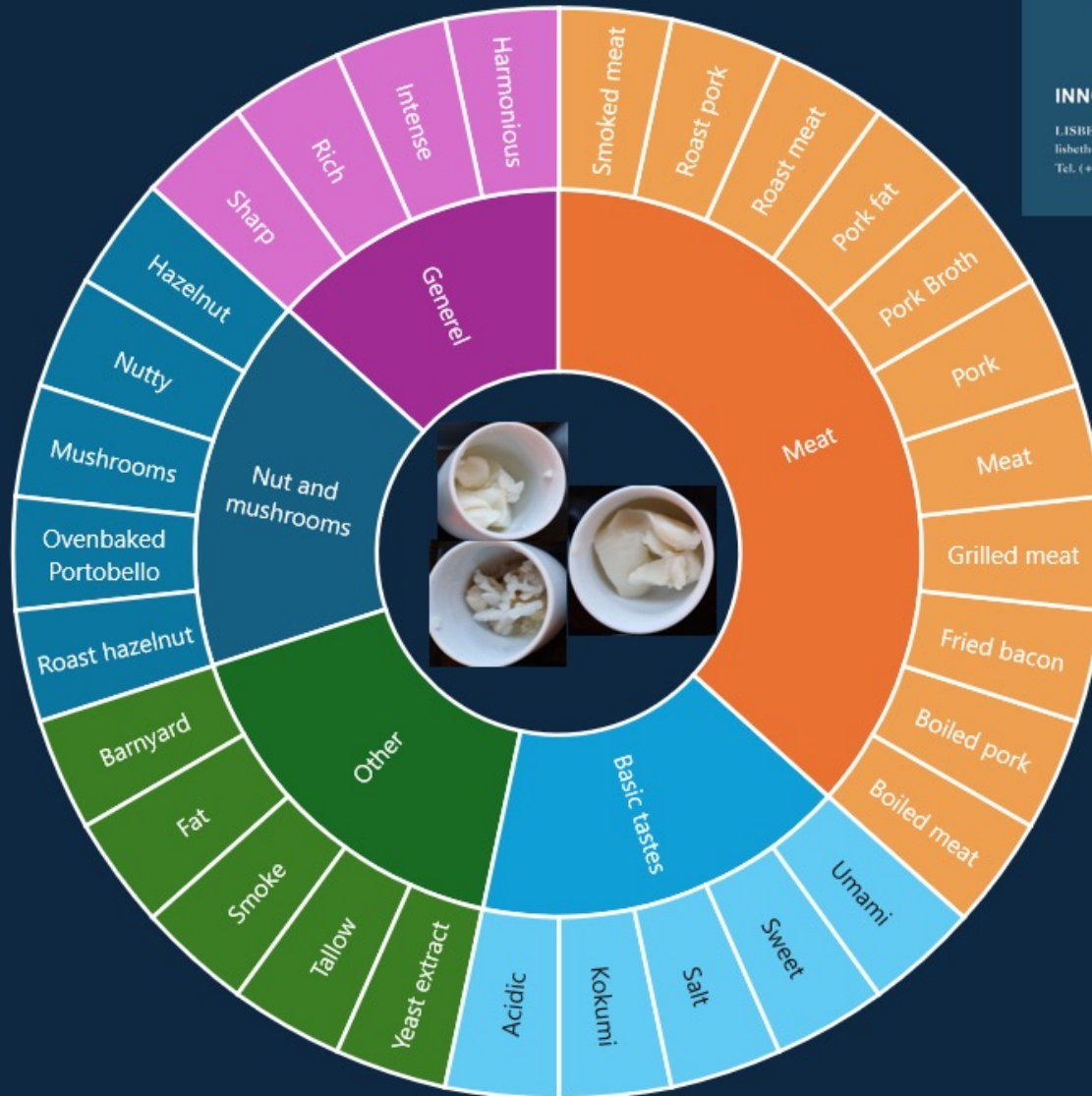
tallow
yeast extract
Smoke
Barnyard
fat
Basic tastes:
Acidic
Umami
Kokumi
Sweet
Salt

General:

Intense
Harmonious
Rich
Sharp

Pork Fat Flavor Wheel

Pork Fat Flavor Wheel

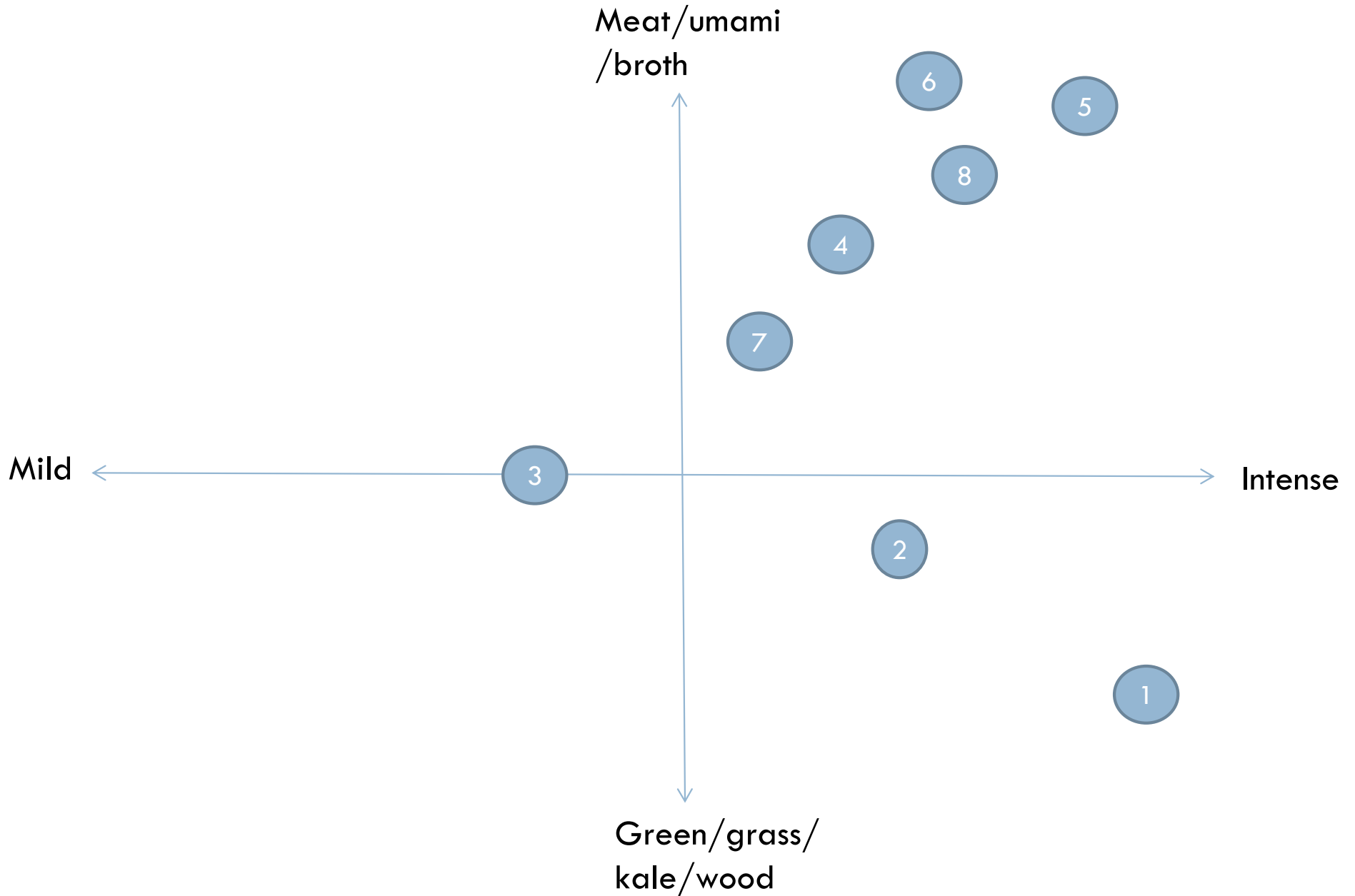


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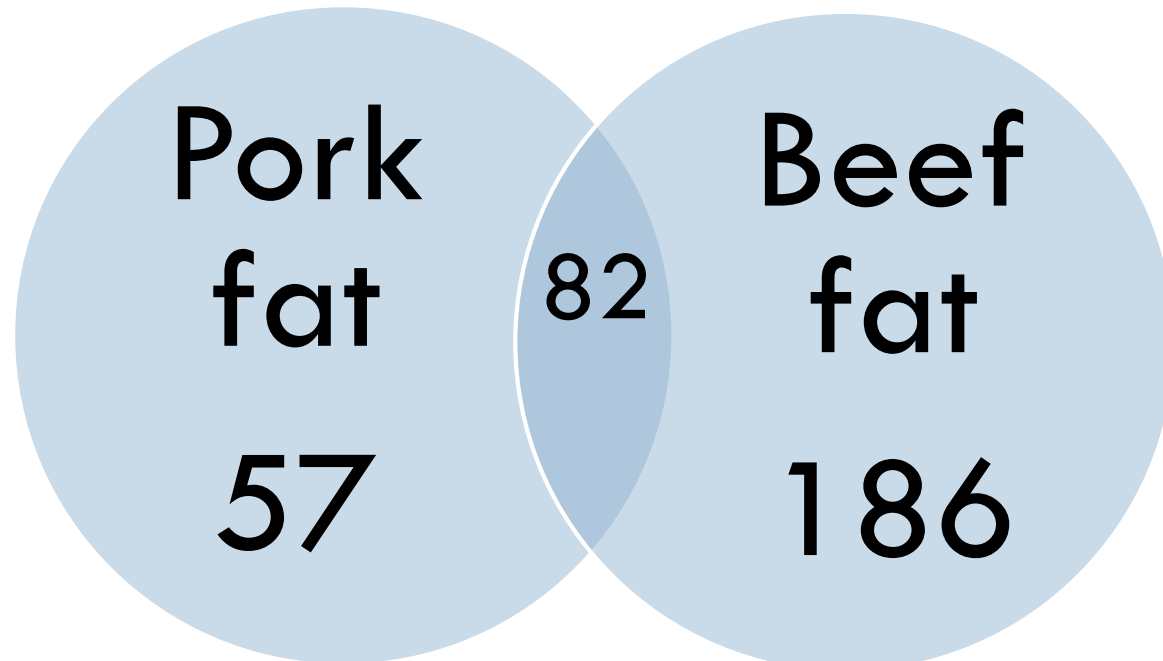
Pork Flavour Map, flavour and texture



Pork fat vs Beef fat

20

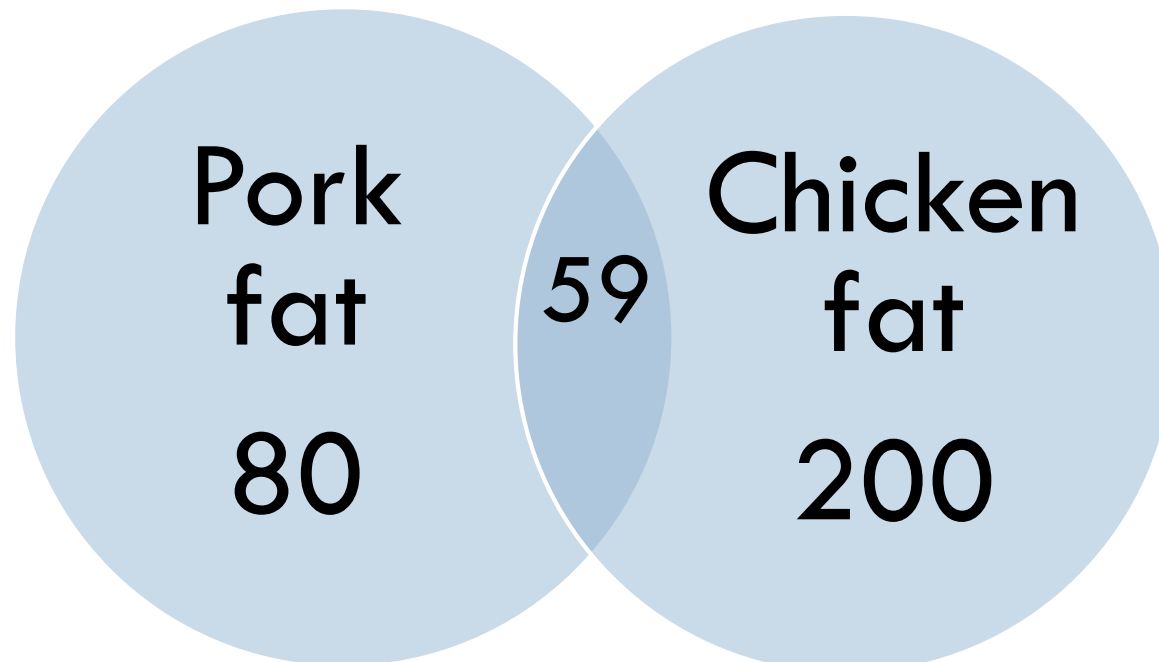
- Pork fat: 139 flavour compounds – 82 in common with Beef fat; 57 exclusively in Pork fat, hereof 31 acids
- Beef fat: 268 flavour compounds – 186 exclusively in Beef fat, hereof only 1 acid, but relatively many hydrocarbons, bases, halogens, furanes ketones and alcohols



Pork fat vs Chicken fat

21

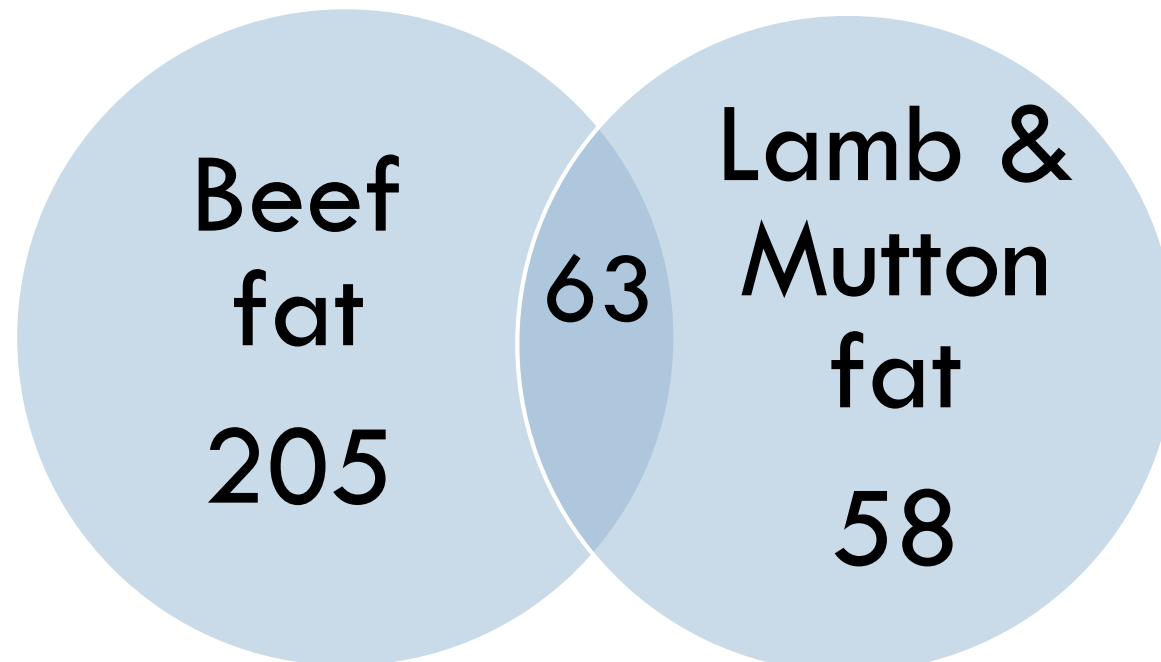
- Pork fat: 139 flavour compounds – 59 in common with Beef fat; 80 exclusively in Pork fat, hereof 27 acids, 33 hydrocarbons
- Chicken fat: 259 flavour compounds – 200 exclusively in Chicken fat, hereof 33 ketones, 24 alcohols, and relatively many furanes and esters



Beef fat vs Lamb & Mutton fat

22

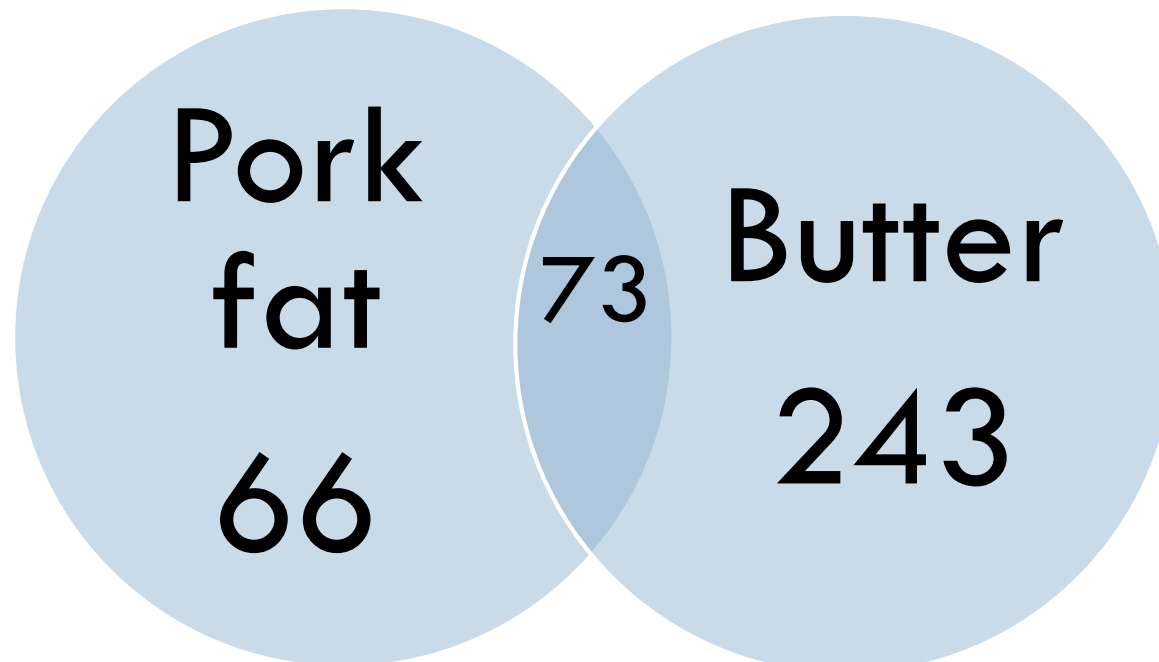
- Pork fat: 139 flavour compounds – 63 in common with L&M fat; 205 exclusively in Beef fat, hereof relatively many hydrocarbons, esters and ketones
- L&M fat: 121 flavour compounds – 58 exclusively in L&M fat, hereof many bases, sulfur compounds and phenols



Pork fat vs Butter

23

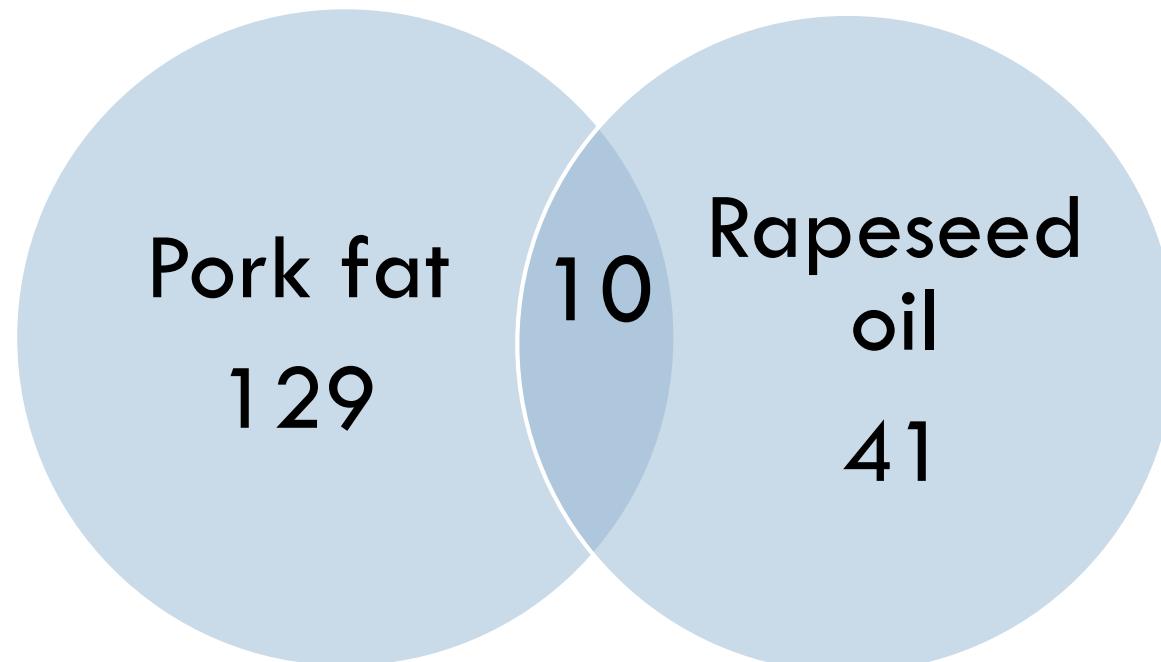
- Pork fat: 139 flavour compounds – 73 in common with Butter; 66 exclusively in Pork fat, hereof relatively many acids and hydrocarbons
- Butter: 316 flavour compounds – 243 exclusively in Butter, hereof relatively many esters and lactones



Pork fat vs Rapeseed oil

24

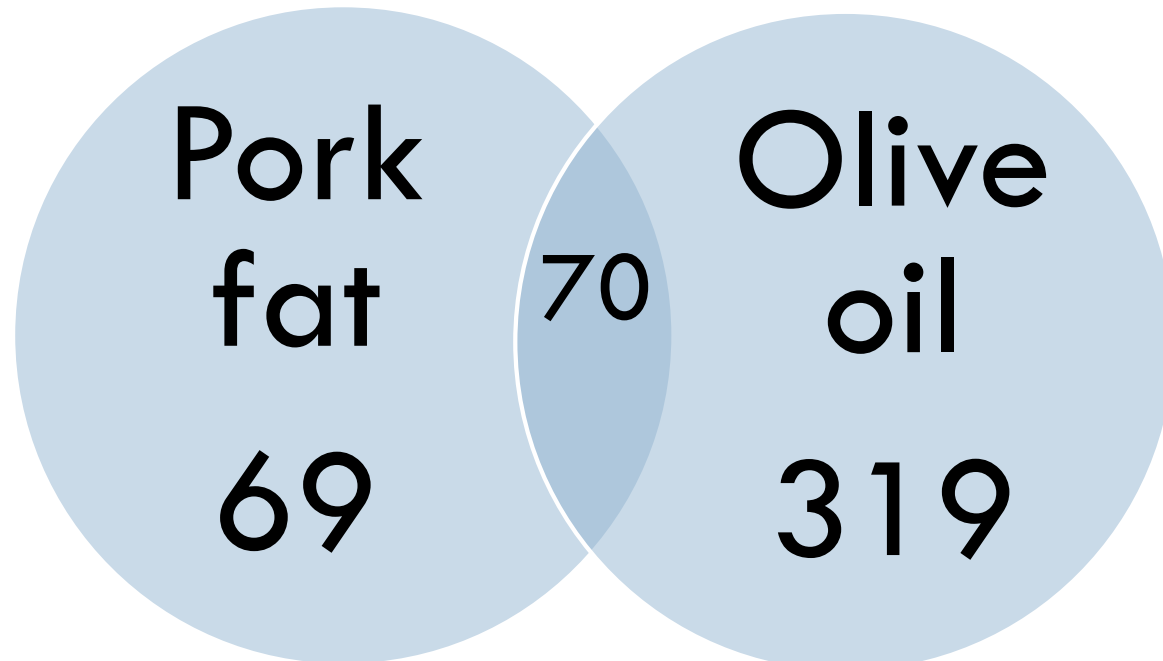
- Pork fat: 139 flavour compounds – only 10 in common with Rapeseed oil; 129 exclusively in Pork fat, hereof relatively many acids and hydrocarbons
- Rapeseed oil : 51 flavour compounds – 41 exclusively in Rapeseed oil, hereof relatively many aldehydes



Pork fat vs Olive oil

25

- Pork fat: 139 flavour compounds – 70 in common with Olive oil; 69 exclusively in Pork fat, hereof relatively many acids and hydrocarbons
- Olive oil : 389 flavour compounds – 319 exclusively in Olive oil, hereof relatively many esters



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