Season to Measure: Measurements in Early Culinary Recipes and their Relation to Medicine

Volker Bach

Abstract: Though Western medieval recipe collections rarely include specific quantities in their ingredient lists, we find some recipes that are both exact and extensive. These invariably address the use of spices and, to a lesser extent, herbs. I will argue that these are imported from the tradition of medical recipes based on similarities in how instructions on quantities and techniques are conveyed. This strand is not the root of modern quantity-based recipes - these have a different and later origin - but provide a reminder of the long close association of the medical and culinary worlds.

When we read pre-modern recipes, we are frequently struck by what seems like an unconscionable carelessness about quantities, proportions and balances. We see this from the earliest sources onward, such as surviving Babylonian recipes:

> Leg of mutton broth: With fresh meat from the leg of mutton. Other meat is also used. Prepare water; add fat; salt, to taste; breadcrumbs, (?); onion, samidu; leek and garlic, mashed with kisimmu.[1]

Apicius, of course, is famous for this and the habit of giving ingredients without quantities and proportions accounts for many misconceptions about the nature of Roman cookery. A recipe like Apicius 4.3.5 is hard to interpret without additional guidance:

> Minutal of apricots: put oil, liquamen and wine in a pan, chop in dried ascalonian onions and diced cooked shoulder of pork. When all this is cooked, pound pepper, cumin, dry mint, dill; pour on honey, liquamen, passum, a little vinegar, some of the cooking liquor; balance the flavours. Put in stoned apricots, bring them to a simmer until they are thoroughly cooked. Crumble a tracta and thicken with some of it. Sprinkle with pepper and serve.[2]

It is easier to do this in the case of Roman cooking because we have a better understanding of the ingredients and cooking methods than we do in the case of Ancient Mesopotamia, but even with a better knowledge of the terminology and available kitchen equipment, it is hard to reconstruct the flavour that was aimed for here. This recipe, like many others of its kind, is aimed at an audience already knowledgeable in the ins and outs of cookery. That

is what most European culinary recipes continue to look like until the Renaissance, when quantities begin to appear more frequently in written sources.

However, every now and then a modern cook trying to find clues how to reconstruct the tastes of our ancestors will come across a much more instructive source. One such case is Anthimus' famous sixth-century recipe #3 for beef stew:

> Beef which has been steamed can be used both roasted in a dish and also braised in a sauce, provided that, as soon as it begins to give off a smell, you put the meat in some water. Boil it in as much fresh water as suits the size of the portion of meat; you should not have to add any more water during the boiling. When the meat is cooked, put in a casserole about half a cup of sharp vinegar, some leeks and a little pennyroyal, some celery and fennel, and let these simmer for one hour. Then add half the quantity of honey to vinegar, or as much honey as you wish for sweetness. Cook over a low heat, shaking the pot frequently with one's hands so that the sauce coats the meat sufficiently. Then grind the following: 50 pepper corns, 2 grammes (*quantum medietatem solidi*) and 1.5 grammes (*quantum pensat tremissis* I) of cloves. Carefully grind all these spices together in an earthenware mortar with the addition of a little wine. When well ground, add them to a casserole and stir well, so that before they are taken from the heat, they may warm up and release their flavour into the sauce. Whenever you have a choice of honey or must reduced by either a third or by two thirds, add one of these as detailed above. Do not use a bronze pan, because the sauce tastes better cooked in an earthenware casserole.[3]

This is something that, despite uncertainties about the type of beef used, the intensity of flavour in the spices – more on that below – and the quantities of some ingredients, we can feel confident to get a reasonably close approximation of. Yet this is not a matter of personal preferences by the author. Anthimus does not always give instructions as detailed. His recipe for hare (#13) is much more typical:

> Hare, if young, can be eaten in a sweet sauce made with pepper, a little clove and ginger, costmary, and spike or leaf of nard.[4]

If, as is generally assumed, recipe collections of this kind are collected from various sources, it is reasonable to think that recipes including such detailed instructions may share a common origin. Tempting though it is to imagine a Q of the culinary corpus, that is probably not a single document, but it may be a tradition. Specifically, the tradition of pharmaceutical recipes.

The connection between food and medicine was strong in the ancient world. Many medical writers made detailed suggestions on foods to seek out or avoid in a given situation.

Prevailing medical theory held that the body's balance depended on four bodily fluids, the humours, each with its own specific qualities, and that outside influences, including food and drink, could strengthen or weaken these qualities. The very word diet originally goes back to the Greek word *diaita* and referred to all aspects of life that an individual could control. It was how physicians approached many diseases.

Yet in addition to such overarching remedies, there was a rich tradition of pharmaceuticals promising more immediate relief. These were prepared by apothecaries, specialists in the growing and preserving of medicinal plants, the sourcing of often expensive imported ingredients, and their combination. Since, unlike those used in cookery, medicinal ingredients were often potentially hazardous, apothecaries required more stringent and precise guidelines. A mistake with foxglove or hellebore could ruin far more than a meal. Most medicinal recipes were for 'simples', single plants used for a given purpose. These rarely required detailed instructions. The more demanding 'compounds', of several ingredients, though, needed exact proportions and procedures. As we would expect, there is a good deal of attention to measures in surviving recipes. This example from Dioscurides (1.99.3) is unusually precise even for Ancient medical literature:

> So-called *rhodides* (rose pastilles) are made thus: 40 drachms of green, unmoistened roses, 5 drachms of Indian nard and 6 drachms of myrrh are ground up, shaped into balls the weight of three obols, and dried in the shade. Then, they are kept in a closed ceramic vessel that admits air. Some also add 2 drachms of costmary and orrisroot mixed with honey and Chian wine.[5]

Several centuries later, roughly contemporaneous with Anthimus, the herbal of Apuleius (15.3) gives instructions for aiding virility:

> If one cannot [perform] with a woman: Orchis root, the right bulb of the root [the Latin uses the word *testiculum*] which is larger. You grind it with 47 peppercorns and four ounces of honey. Dissolve the drug in the best wine and take the weight of 9 scruples for three days.[6]

This comes remarkably close in diction and practice to Anthimus' beef stew: counting out peppercorns, weighing ingredients and taking procedures step by step. It is a form we will find again and again in the more detailed recipes from the culinary corpus of pre-modern Europe, and it distinguishes these examples clearly from the majority.

It is noteworthy that recipes involving precise measurements in the earliest sources almost always involve spices. This, too, is not surprising. Spices were rare and expensive, and often associated with apothecaries due to the concentrated qualities they were thought to possess. Adding them to food was thought of as a good way of shifting its humoral balance. They were weighed out in small quantities both for practical reasons – portions were small

– and because of their value. The Formulary of Marculphus dating to Merovingian times lists pepper, cloves, costmary, spikenard and cinnamon among the supplies given to royal emissaries.[7] Unfortunately it does not preserve quantities, but the form of the placeholder (*tantum* for pepper, singular *tanto* as opposed to plural *tantos* for the others) suggests a measure. No unit is given, as it is for other supplies measured in pounds and modii. Peppercorns are counted, other spices weighed – the picture is consistent.

For a considerable period after the works of Anthimus and Vinidarius, almost no culinary recipes survive from medieval Europe. Medicinal recipes, however, do, though not in large numbers. Many continue in the tradition of the Ancient world, not least in preserving the specific system of measurement used by apothecaries. An exact standardisation was never achieved, but the Roman subdivision of the pound into ounces, drachms, and grains was universally understood and used. This is not to say that all medicinal recipes were precise. We find many that rarely bother with measurements beyond what is to hand in a kitchen, as in this example from the tenth-century Bald's Leechbook:

> For headache, take blossoms of dill, seethe in oil, smear the temples therewith. [...] For the same, take a vessel full of leaves of green rue, and a spoon-full of mustard seed, rub together, add the white of an egg, a spoon full, that the salve may be thick. Smear with a feather on the side which is not sore.[8]

This looks a lot like culinary recipes do when they surface in written sources.

Spices continue to be associated with apothecaries through the Middle Ages, though it is not because they were commonly used for medicinal reasons. The eleventh-century Macer Floridus, a didactic poem on medicinal plants, states clearly that pepper, though part of many compound medicines, is *notius ipsa coquina quam medicina* – more renowned through the kitchen than through medicine (l 2060).[9] Yet in many places, apothecaries remained the main source of spices for private customers. In German cities especially, they enjoyed a legal monopoly on their retail well into the modern age. A chance survival shows the privileged apothecary of Hamburg held 6 lbs. of cassia, 12 lbs. of ginger, 9 lbs. of cinnamon, 4 lbs. of cardamom, and 12 lbs. each of nutmeg and saffron, along with 1,727 lbs. of sugar, 2½ tuns of various honeys, and 15 *stöveken* (about 60 L) of olives according to its 1564 inventory.[10] These are large quantities, but not an unusual product range.

Meanwhile, culinary recipe collections continue to throw up the odd example of highly specific, detailed instructions along with more general descriptions. In the Harpestreng collection which may date to the thirteenth century, we have a good example of using proportion rather than quantity to determine the amount of spices:

> How to prepare a sauce for the lords and how long it lasts: One takes cloves and nutmeg, cardamom, pepper, cinnamon – that is canel – and ginger, all in equal amounts, except that there should be as much canel as all the other

> spices; and add twice as much toasted bread as of everything else, and grind them all together, and blend with strong vinegar, and place it in a cask. This is a lordly sauce, and it is good for half a year.[11]

The German cookbook of Meister Hans, a collection of courtly recipes dating to around 1460, gives instructions for reconstituting dried ginger roots to simulate preserved ones (recipe #153):

> Also if you want to make good green ginger, almost like they bring it from Damascus. Take warm water and place the ginger into it overnight. Let the water stand by the embers overnight. This way it becomes quite soft during the night. Take it then and peel it with a knife. Keep and dry the skin and grind it to a powder. Then take honey and clear it, so that the scum goes away from it. With four *lot* take one *lot* ground white ginger, two *lot* cloves, three *lot* ground sugar, and one *lot* cinnamon bark. Put all of this into a pan with the white ginger and let it boil nice and long. That way the syrup is good. Then take glazed jars, which must be glazed inside and out, and place twelve pieces into each. Pour the syrup into them until they are full, then it is good.[12]

This recipe is interesting for several reasons. First, because it indicates ginger preserved in sugar syrup was a familiar trade item, secondly for giving precise quantities of spices to reconstruct a flavour combination, and finally because it gives them in lot, a fraction of the pound used by merchants, not apothecaries. The item itself is something one could easily see an apothecary selling.

This matters because many of the culinary recipes we find giving exact quantities or proportions are of this kind: Spice mixes and seasoned wines. These are products people would have purchased from apothecaries or spicers. Since the ability too purchase raw materials in bulk and have processing happen in the household was one of the primary distinguishing marks of wealth in pre-modern European society, such recipes would have represented valuable knowledge. One can see why they were entered into collections.

The Menagier de Paris (recipe 273) preserves instructions for preparing Ypocras powder used to make a popular variety of spiced wine:

> [...] take an *once* of *cinamonde*, known as long tube cinnamon, a knob of ginger, and an equal amount of galangal, pounded well together, then take a *livre* of good sugar; pound this all together and moisten it with a gallon of the best Beaune wine you can get, and let it steep for an hour or two. Then strain it through a cloth bag several times so it will be very clear.[13]

This was also used as a spice mixture known as Duke's powder (which may be a misreading of *poudre doux* – sweet powder). In a fourteenth-century Italian recipe collection, we find other, more robust blends:

> Fine spices for all foods: Take an *onza* of pepper and one of cinnamon and one of ginger, and half a quarter of cloves and a quarter of saffron. [...] Black, strong spices to make sauces: take half a quarter of cloves and two *onze* of pepper, and take the same amount of long pepper and two nutmegs; this will serve for all spices.[14]

Sweet mixtures remained especially popular, and we find them returning in many Renaissance collections. One of the very rare Low German recipe collections, the *klene Kakeboeck* printed in Hamburg in the late sixteenth century, records two (recipes 28 and 29) by the name of Salsament:

> Half a pound of sugar, one *lot* of ginger, one *lot* of cinnamon, a *quentin* of mace, a *quentin* of galingale, those shall be taken and ground up small and mixed together. [...] Two pounds of sugar, three *lot* of cinnamon, two *lot* of ginger, two *lot* of galingale, one *lot* of mace, a *quentin* of cardamom, a *quentin* of pepper, grind that to powder etc.[15]

Balthasar Staindl's South German cookbook records a very similar mix by the more familiar name *triget* and adds a more complex spice mixture for fish:

> To make a species: For fish, take cinnamon tubes four lot, ginger one and a half lot, pepper one lot, grains of paradise half a lot, galingale, cloves, costmary and nutmeg each the weight of a guilder, whole saffron, rue, and sanicle each the weight of two guilders. Soak the saffron and sanicle in good brandy for an hour or two. Cut the cinnamon tubes, galingale, ginger and nutmeg into pieces and leave the other things uncut. Put it all together into a mortar and take eight lot of sugar with it. Then pour in the saffron and sanicle together with the brandy and pound it until it is very small. Do not sift it until the saffron and sanicle is mixed in very well with all the rest. Then sift it. But if it will not pass, let it stand to dry in the sieve, or in the sun, or in the (heated) room until it is dry. Then pound it, sift it and mix it thoroughly. You may add little (less) sugar or none, as you wish.[16]

In all these cases, the majority of recipes in the source give few or no quantities.

It is not clear whether references like 'sweet spices', 'triget' or strong spices' in other recipes refer to such mixes. Most likely, they could always be bought ready-made, but some cooks preferred to blend their own or combine spices anew every time. Certainly they were luxury goods and the knowledge how to produce them was marketable. Getting the proportions right would have been important in order to approximate a familiar flavour, a kind of brand identity that allowed for variation, but could not be abandoned. The cognoscenti knew what hypocras or triget were supposed to taste like.

None of this shows with certainty that the medicinal tradition is the source of these precise ingredient measures. Another possible origin is the Arabic tradition, where precise measures in recipes go back much farther than in the West. However, the fact that the mode of measuring is often that used in contemporary medicinal texts and that it is almost always spices – medicinally potent and expensively traded – that were thus measured suggests it. There is another piece of – admittedly tentative – evidence that points this way.

By the sixteenth century, recipes more frequently include quantities and detailed instructions, though this is still by no means universal. With text becoming cheaper to reproduce, it was feasible to become downright chatty. In Germany, several large volumes were produced in the late sixteenth century that would go on to define the genre for almost a hundred years. Among them, the *New Kochbuch* by the personal cook to the Archbishop-Elector of Mainz, Marx Rumpolt, is the most interesting source historically. However, the one that stands out for its attention to quantities, proportions, and processes is the 1597 *Köstlich New Kochbuch* by Anna Wecker, the first printed cookbook authored by a woman. This is telling because the author was the widow of a renowned physician and dedicated her work to invalid cookery. It appears to have been the kind of thing that medical professionals paid attention to. Her description of making a simple pear tart is instructive:

> Cook sliced pears well, make them thin in fat the way you would otherwise cook a spoon dish of pears [*Birnenmus*] so that they have a nice cooking liquid, whether of their own or made, and so that they stay white. The slices should be very thin and broad.
>
> Prepare the pastry crust. Take ginger, cinnamon, nutmeg, and sugar according to how sweet the pears are by themselves, and strew of this in the bottom of the crust together with raisins. Then lay the pears on it well and orderly so that you cannot see the bottom. Then strew it again with the above stuff [spices] and make another layer [of pears] in the middle. Lay it a little thicker than at the edges. Strew it well again on top.
>
> No pastry crust for any tart should be thicker than a finger. Not only does that make them common [*paeurisch* – literally peasant style], but they also do not turn out as nicely as they should.
>
> Place a nicely cut lid on top, brush it with beaten egg and bake it crisp, but not too dry. Pour in the cooking liquid the pears had at the top when the crust has hardened. Nutmeg is very useful in spices with pears.[17]

This is an entirely different mode of communicating cooking instructions. Anna Wecker has exact quantities in some recipes, but most of her detail is put in terms that made sense in a kitchen of her time. Only large establishments were normally equipped with scales or measuring cups before the nineteenth century. Pounds and their fractions, units known from

market sales, the volume of familiar containers and counts of things like eggs and fruit are the quantities we find more and more frequently in the coming centuries. A typical example (recipe 430) comes from Marcus Looft's successful *Niedersächsisches Kochbuch* of 1786:

> An applecake. A good part of apples are peeled, the cores removed and cut into thin slices before the hand. Further, you make one and a half quarter pounds of beaten butter, stir eight egg yolks into it, eight pennies' worth of grated white bread, ¼ lb pounded sugar, lemon peel, cleaned raisins and pounded cinnamon. The egg whites are beaten to a foam and also stirred in, and then this is mixed very strongly with the cut apples. The cake is best baked in a hoop prepared for the purpose.[18]

Recipes like these still required interpretation, but they were – and still are – easy to follow for experienced cooks. Spices, however, were mostly left to the cook's discretion even in recipes where the intended balance and quantity would matter. German cooking never abandoned spices to the degree French court cuisine did, but German cookbooks readily omitted any guidance as to how to apply them even in a recipe calling for bay leaves, lemon peel, thyme, parsley, pepper, cloves and mace.[19]

By the time exact measures became common in recipes, spices had lost their medicinal standing and their social status. Largely viewed as superfluous fripperies, they were frequently ignored by nineteenth-century cookbook writers. Instances of precision in seasoning are rare and usually aimed at cooks of the lower classes who were generally discouraged from using spices at all. Meta Adam, writing a mass-market cookbook in Germany's darkest half-century, suggested simplifying the process to a *Gewürzdosis*, a spice dose of four peppercorns, two grains of allspice, one clove and half a bay leaf that is either included in a recipe, or not.[20] It was practical, but hardly appealing.

Notes

1. Quoted after: Bottero, Jean: *The Oldest Cuisine in the World. Cooking in Mesopotamia*. University of Chicago Press, Chicago and London 2004, p. 28. Tablet A, recipe 18
2. Quoted after: Grocock, Christopher and Grainger, Sally (ed. and trsl.): *Apicius. A Critical Edition with an Introduction and English Translation*. Prospect Books, Totmnes 2006, p. 197
3. Quoted after: Grant, Mark (ed. and trsl.): *Anthimus de obseruatione cibnorum. On the Observance of Foods*. Prospect Books, Totnes 1996, p. 51
4. Quoted after Grant, *Anthimus* p. 55
5. Quoted after Aufmesser, Max (ed. and trsl): *Pedanius Dioscurides aus Anazarba: Fünf Bücher über die Heilkunst*. Olms Verlag, Hildesheim et al. 2002, p. 72. English translation mine.
6. Quoted after Brodersen, Kai (ed. and trsl.): *Apuleius Heilkräuterbuch Herbarius*, marix Verlag, Wiesbaden 2015, p. 66. English translation mine.
7. Digital Monumenta Germaniae Historica, Leges V, Formulae Merowingi et Karolingi aevi p. 49, https://www.dmgh.de/mgh_formulae/index.htm#page/(II)/mode/1up (last accessed 08 May 2020)
8. Quoted after: Cockayne, Oswald (ed. and trsl.): *The Leechdoms, Wortcunning and Starcraft of Early England* vol II, Longman, London 1863, p. 20. https://archive.org/details/leechdomswortcun02cock/page/n11/mode/2up (last accessed 08 May 2020)

9. Mayer, Johannes Gottfried and Goehl, Konrad (trsl and ed.): *Kräuterbuch der Klostermedizin. Der Macer floridus. Medizin des Mittelalters*. Reprint-Verlag, Leipzig 2003, p. 248 f.
10. Bach, Volker: *The Kitchen, Food and Cooking in Reformation Germany*, Rowman and Littlefield, Lanham et al. 2016, p. 92
11. Grewe, Rudolf, and Hieatt, Constance B.. *Libellus De Arte Coquinaria: An Early Northern Cookery Book*. Tempe, Arizona Center for Medieval and Renaissance Studies, 2001.
12. Ehlert, Trude (ed. and transl.): *Maister Hannsen des von Wirtemberg Koch* Frankfurt, Tupperware 1996, translation mine
13. Quoted after Redon, Odile; Sabban, Francoise and Serventi, Silvano: *The Medieval Kitchen*, University of Chicago Press, Chicago 1998, p. 221. the once is about 30 grams, the livre about 480 grams in the Paris measure.
14. Quoted after Redon et al. p. 221 f. The exact weight of the onza (oncia) is uncertain.
15. Quoted after Brunzel, Nicole: *'Dat klene Kakeboeck…' Eine Untersuchung zur mittelniederdeutschen Fachprosa*, MA Diss, Hamburg 1994, p. 41. English translation mine. The most likely measure used here, the Hamburg pound, is 484 grams, the *lot* is 15 grams, the *quentin* about three.
16. Quoted after Staindl, Balthasar: *Ein sehr kuenstlichs und nuetzlichs Kochbuch*, Augsburg 1569, p. 43 v. Translation mine
17. Wecker, Anna: *Ein Koestlich New Kochbuch*, Amberg 1598, p. 114 f. Translation mine.
18. Quoted after Looft, Marcus: *Zweytes Niedersächsisches Kochbuch oder Bemerkungen und Zusätze zu Marcus Looft's Niedersächsischem Kochbuche*, Göttingen 1786, p. 327 f. Translation mine.
19. Anon.: *Das Brandenburgische Koch-Buch*, Berlin 1723, recipe 22 for cold rolled beef.
20. Adam, Meta: *Hamburger Kochbuch*, Broschek Verlag, Hamburg 1949, p. 11