



## Names which originate from plants within terminologia anatomica

### Terminologia anatomica'da yer alan bitkisel kökenli isimler

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#### Abstract

The anatomy is the first step in medical education. Education of terminology is the base of anatomy lesson. The science of anatomy possesses very rich terminological knowledge. The basis of this terminology is based on words which originate from the Latin and Greek. Those terms were published as a list in Terminologia Anatomica (TA). TA, published in 1998 by the Federative Committee on Anatomical Terminology, was scanned to determine the names of vegetable origin. Turkish meanings of these names were detected from various dictionaries. We have determined 7537 anatomical terms in TA which defined the structures of human body. These names divided in two groups. Whether the first group names (13 names) were reminded directly by plant, the second group names (12 names) were not reminded directly by plant names but their origins were based on plant origin. We examined how often these names are repeated in TA. We determined that these names repeated in 647 times. The ratio of names which based on plant origin was 7,4% in total terms of TA.

If we determine these plant origin names in anatomic terms and explain them to student with knowing the meaning of these names, we may contribute the better understanding of anatomy.

**Keywords:** Anatomy; Terminology; Plant.

#### Öz

Tıp eğitiminin ilk adımı anatomi, anatomi dersinin temeli ise terminoloji eğitimidir. Anatomi bilimi oldukça zengin bir terminolojik birikime sahiptir. Bu terminolojinin temeli Latince ve Grekçe kökenli kelimelere dayanmaktadır. Bu kelimeler Terminologia Anatomica'da (TA) liste halinde yayınlanmaktadır. Bitkisel kökenli isimleri tespit etmek için Federative Committee on Anatomical Terminology tarafından 1998 yılında basılan TA tarandı. Bu isimlerin Türkçe anlamları çeşitli sözlüklerden yararlanılarak ortaya kondu. İncelediğimiz mevcut TA'da insan vücudundaki yapıları tanımlayan 7537 adet anatomik isim tespit edildi. Bu isimler iki gruba bölündü. Birinci grup doğrudan bir bitki adını temsil eden (13 adet) isimlerden, ikinci grup ise doğrudan bir bitki adını temsil etmeyen ancak bitkisel bir kökene dayanan (12 adet) isimlerden oluşturuldu. Bu isimlerin TA'da ne kadar sıklıkta tekrarlandığına baktığımızda; tüm bitkisel isimlerin toplamda 647 kez geçtiği tespit edildi. Bitkisel kökene dayanan isimlerin yer aldığı tanımların TA'daki tüm tanımlamalara oranı % 7,4'dür.

Anatomik terimler içerisinde bitkisel kökenli olanları tespit edip ortaya koymak ve bunların anlamını bilerek öğrencilere aktarmak anatomi eğitiminin daha kolay anlaşılmasına katkı sağlayacağı kanaatindeyiz.

**Anahtar Kelimeler:** Anatomi; Terminoloji; Bitki.

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### Use of Anatomical Terms in Medical Education

The basic element which facilitates communication among scientists working in a specific field of science is the common terminology pertaining to such branch of science. Therefore, the first difficulty experienced by young people stepping into a new scientific field is the comprehension of the terminology pertaining to it. In this sense, the first difficulty faced by the newcomers of medical school is the distinctiveness of medical terminology. The greatest responsibility in overcoming this obstacle falls on the shoulders of teachers and practitioners of anatomy, which constitutes the basis of medical education.

Currently, there are nearly 170,000 terms defined in the field of medicine. This number corresponds to an amount bigger than the vocabulary of many national languages (1). Approximately 10,000 of these terms are anatomical terms about organs and formations. However, when 20.000 terms which are functionally used are added to this number, it reaches up to 30,000, and the rate reaches up to 17% (2). However, all the terms are not included in Terminologia Anatomica (TA) (3). The anatomical terms included and numbered in TA are approximately 7,000 (4). In addition, some software operating in the electronical environment currently (websites) offers spellchecking for 60 branches of expertise in nearly half a million medical terms (5).

The roots of anatomical terminology that we use today dates back to 2500 years ago. They were derived from

ancient Greek and Latin languages which were regarded as the languages of science in those times (5-8). Though these languages do not have any political influence anymore, their influence on anatomical terminology remains the same. Most of the words used in anatomical terminology have different meanings than those that are meant in the daily language (7).

Various criteria are taken into account while naming the structures in human body. They may be about the position of a structure, its function, its size, and its shape sometimes and involve analogies to vegetable or animal structures some other times. We use these names as we know them today and never think of their original meanings. We refer to them only by their anatomical meanings. This creates a problematic situation for new students receiving education on anatomy in terms of comprehension. The purpose of this study is to reveal the names that were formed based on plants and vegetable roots among the anatomical terms in TA and to detect how often they are used in order to make a contribution to the elimination of these problems in anatomy education.

### Search of Anatomical Terms

The source of this study is TA published in 1998 and prepared by the Federative Committee on Anatomical Terminology (FACT) (3). After reviewing all the terms in TA, the ones derived from plant names were detected, and their Turkish equivalents were found from 13 dictionaries (Table 1) and tabulated.

Table 1. Utilized dictionaries

No	Printing House and Year	Dictionary name	Author
1	Sosyal Yayınlar, İstanbul 1995	Latince Türkçe Sözlük	Sina KABAĞAÇ, Erdal ALOVA
2	World Scientific, Singapore 2006	Anatomical Terms and Their Derivation	F. Peter LISOWSKI, Charles E OXNARD
3	Ankara Üniversitesi, Eczacılık Fakültesi Yayınları, Ankara 1988	Eczacılık Botanik ve Tıp Öğreniminde Mesleki Latince	H. BRUNNER, N. TANKER
4	Nobel Tıp Kitabevleri, İstanbul 2007	Tıbbi Latince Gramer ve Sözlük	Recep MESUT
5	Nobel Tıp Kitabevleri, İstanbul 2011	Tıbbi Terminoloji	Recep MESUT
6	Nobel Tıp Kitabevleri, İstanbul 2012	Sekiz Dilde Anatomi Terimleri Sözlüğü	Recep MESUT
7	Atatürk Üniversitesi Basımevi, Erzurum 1988	Tıp Terimlerinin Oluşması ile İlgili Genel Bilgiler ve Fonksiyonel Anatomi Terimleri Sözlüğü	Yaşar KUYUCU
8	İstanbul Üniversitesi Basımevi ve Film Merkezi, İstanbul 1993	Genel Anatomi Terminolojisi ve Kullanım Özellikleri	Metin TOPRAK Salih Murat AKKIN
9	İzmir Güven Kitabevi, İzmir 2001	Temel Tıp Terimleri Sözlüğü	Figen GÖVSA
10	Güneş ve Nobel Tıp Kitabevleri, Bursa 2002	Türkçe ve İngilizce Karşılıkları İle Anatomi Terimleri Sözlüğü	N. Şimşek CANKUR
11	Güneş Kitabevi, İstanbul 1987	Tıp Sözlüğü İngilizce-Türkçe	Pars TUĞLACI
12	Ankara Üniversitesi Basımevi, Ankara 1991	Açıklamalı Tıp Terimleri Sözlüğü	Utkan KOCATÜRK
13	Türk Dil Kurumu Yayınları, Ankara 1998	Biyoloji Terimleri Sözlüğü	Sevinç KAROL Zekiye SULUDERE Cevat AYVALI

Afterwards, TA was reviewed once again to reveal how often vegetable names are used. Vegetable names were divided into two categories. The first group covers the names directly representing a plant. The latter group covers the names not directly representing a plant but having roots from plants. The distribution areas of the

first group plants were searched, and the obtained data were evaluated.

Classification of Plant Names, Used as Anatomical Term  
There are 7658 terms defining structures in human body in TA, which was reviewed. However, this number does

not include general headings. When these headings are included, the number reaches up to 7680. 13 names within 7658 definitions in TA were found to directly remind of a plant's name (Table 2).

Moreover, 12 names were found not to remind a plant's name directly, but to have been derived from plants' names (Table 3).

Considering how often these names are repeated in TA, it is seen that certain names (e.g. cartilago triticea) are mentioned only once whereas certain names (e.g.

nucleus) are repeated 358 times. In total, the names with vegetable roots are repeated 647 times in TA (Table 4).

The proportion of the definitions involving names based on vegetable roots in TA to all definitions is 8.44%.

When the regions where the plants used as anatomical names in TA are grown were searched, all these plants were seen to be grown in Asia and Europe. More precisely, it is known that these plants are abundantly grown in Anatolia and Mediterranean Basin (9, 10).

**Table 2.** Reminded directly by plant name and means

Root of Word	Origin	Mean	Example in TA
amygdalon	Gr	Tonsil, almond	Corpus amygdaloideum
bulbus	L	onion	Bulbus, bulbus oculi
iris	L	Iris	İris
lens, lentis	L	Lentil, lens	Nucleus lentiformis
olivia	L	Olive	Oliva
palma	L	Date, tree, offshoot, palm	Pilicae palmatae
pirum, pirus	L	Pear, Pear tree	Apertura priformis
pisum	L	Pea	Os pisiforme
Sesamon	Gr	Sesame	Os sesamoideum
thymos	Gr	Oregano, thymus	Thymus
thym/um	L		
tonsilla	L	Tonsil	Tonsilla pharyngea
tritric/um	L	Wheat	Cartilago triticea
utv/a, ae, uvea, uvula	L	Grape, bunch	Pars uvealis Uvula palatina

**Table 3.** Not reminded directly by plant names but their origins were based on plant origin

Root of Word	Origin	Mean	Example in TA
	Gr	Tree	Arbor vitae
cortex	L	Crust	Cortex cerebelli
gemma	L	Bud, gemma	Gemma gustatoria
glans	L	Acorn	Glans penis
granum	L	Seed, grain, nucleolus	Granulationes arachnoideae
karyon	Gr	Kernel, stone	Perikaryon
lacrim	L	Gum mastic, tear	Glandula lacrimalis
maccis	L	Geraniums	Macula lutea
nucleus	L	Kernel, seed, core	Nucleus pulposus
pampinus	L	Tendrill	Plexus pampiniformis
pinealis	L	Pinecone	Corpus pineale
planta	L	Offshoot, sürgün, sole	Planta, Regio plantaris

**Table 4.** The repetition frequency of names in TA

Reminded Directly by Plant Names		Not Reminded Directly by Plant Names	
amygdalon	13		2
bulbus	35	cortex	10
iris	9	gemma	1
lens, lentis	12	glans	5
olivia	33	granum	5
palma	26	karyon	1
pirum, pirus	4	lacrim	34
pisum	3	maccis	10
Sesamon	4	nucleus	358
thymos	7	pampinus	1
thym/um			
tonsilla	29	pinealis	4
tritric/um	1	planta	35
utv/a, ae, uvea, uvula	5		
<b>TOTAL</b>	<b>84</b>		<b>563</b>
<b>GENERAL TOTAL</b>		<b>647</b>	

## CONCLUSION

Anatomy is a milestone in medical education. There are various ongoing discussions about how to give this education. Considering from students' perspectives, anatomy course is distinguished from other courses and given the seat of honor for the sake of their future professional lives (11). The indispensable part of anatomy course is terminology education. The science of anatomy has rather a rich terminological accumulation. Majority of this terminology were derived from Latin while some were derived from Greek. However, Greek-based terms gained forms of writing and expression complying with Latin grammar rules (12). It has been 117 years since Latin- and Greek-based anatomical terminology was accepted by German speaking anatomy foundations (Anatomische Gesellschaft) in 1895 (Basiliensia Nomina Anatomica (BNA)). This basic list was revised in the subsequent years, and new lists were published (Jenaisia Nomina Anatomica (JNA) 1935; Parisiensia Nomina Anatomica (PNA) 1955; Nomina Anatomica 2<sup>nd</sup>-6<sup>th</sup> editions 1960-1989). Currently, TA is in use. These terms are still being used for anatomy and medicine (7). However, clinicians seem to be as eager as anatomists to use these terms. Therefore, there has not been a consistency yet (13). These terms may refer to a location (suprahyoidei), a function (adduction), a shape (deltoid), another living being (vermis), an object (calyx), a letter (sigmoid), a mythological character (Atlas, Achilles), or a culture belonging to past or a tradition (8). More than 30% of certain anatomical texts consists of technical terms (terminology). Emphasizing the etymology of these terms during the education may draw the attention of students and facilitate an easier comprehension (5). Learning Latin and Greek roots of anatomical terms better contributes to keeping this terminology in mind and understanding the prefixes and suffixes (while forming compound terms) whereas it is not so much of a contribution to the comprehension of anatomical content. Learning Latin- and Greek-based anatomical terminology may be of service to two purposes: the first is learning a specific language to study anatomy, and the second is to learn the relevant subject in the science of anatomy (8). Anatomical terms are highly valuable for medical sciences in order to have a good command of the structures in human body. We clearly understand this when we read an anatomical text written by Galen (129-216) during the period of the Roman Empire (4).

Considering from the perspective of anatomists, using current TA for medical education will facilitate

communication among colleagues. Anatomical terms are appropriate tools to define and identify anatomical structures. However, teaching these structures is really problematic. Medical students often complain about the difficulty of memorizing anatomical terms and keeping them in mind. Anatomy instructors have the heaviest responsibility to minimize these problems. Anatomists should try to convey their terminological accumulation to students by employing an appropriate language and proper methods for educational activities. Current terminological accumulation is the product of previous generations' efforts. We believe that anatomists should contribute to this accumulation with a specific awareness on this issue.

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