

## CLINICAL CASE ΚΛΙΝΙΚΗ ΠΕΡΙΠΤΩΣΗ

# Research on the kidney and hair loss based on ancient Chinese medical literature

*Huang Di Nei Jing* (Inner Canon of the Yellow Emperor) embodies the fundamental view of the human body in the Chinese medical system. Its important concepts are based on the interpretation of the natural rhythms and human physiology. In the book's first part of *Su Wen* (Plain Questions), it is underlined that the kidney governs growth in general and stores the essence (*jing*), with hair being its external manifestation. According to the text, kidney qi is associated with the production and growth of hair, as well as their diseases, like hair loss or greying. With the kidney association in mind, over 400 Chinese medical books were investigated to collect the materia medica and formulas recommended for the treatment of hair loss created by the Chinese physicians of the past. This huge volume of information was categorised in three groups, according to the historical periods and their simple and compound drugs were compared, to create a list with possible candidates for future research. Indeed, a scholastic review of these texts from the past dynasties revealed an enormous wealth of ideas on hair disease pathogenesis and the formulas for its treatment. Several of these methods for nourishing the hair seem to have scientific and practical value.

## 1. INTRODUCTION

Hair loss is a symptom of common skin diseases, like alopecia seborrheica and alopecia areata. The first one is also known as male pattern hair loss or androgenetic alopecia, with increased seborrhoea, dandruff, hair dryness and pruritus, while alopecia areata usually has a sudden onset, with severe hair loss and normal skin. In severe cases, it develops to alopecia totalis (total hair loss of the skull) or alopecia universalis (total loss of body hair).

Based on the records of ancient Chinese medical texts, this article systematically summarises the information on hair loss (*fa luo* or *fa duo*) and body hair loss (*mao luo*) which include withered skin, alopecia areata, hair loss and reduced growth (*fa tuo bu zhang*), loss of hair and eyebrows, glossy scalp wind (*you feng*) etc. Through time, people's understanding of hair loss became more elaborate, driving to a deeper analysis of its pathogenesis. In Sui, Tang and later dynasties, new terms appeared, suggesting that hair

loss could also be associated with "wind" (*feng*) pathology (e.g. "ghost licking hair", "head wind white scaling", "white scaling and wind itching").

## 2. UNDERSTANDING OF HAIR PHYSIOLOGY IN ANCIENT CHINESE MEDICAL LITERATURE

The pathology of hair in Chinese medicine is based on its physiology and more specifically on the concepts of the eight principles (yin-yang, hot-cold, external-internal and excess-deficiency), the five zang-six fu organs, correlated with the five elements (*wu xing*), as well as the six level theory (*taiyang, yangming, shaoyang, taiyin, shaoyin, jueyin*). In the classical medical texts, there are many references explaining the mechanism of hair growth and consequently their possible ailments. The most important remarks include the following:

- The kidney stores the essence (*jing*) and transforms it to blood (*xue*). This essence is the root of the body.<sup>1</sup>

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Έρευνα όσον αφορά στα νεφρά και την απώλεια μαλλιών με βάση την αρχαία κινεζική ιατρική βιβλιογραφία

Περίληψη στο τέλος του άρθρου

### Key words

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- The hairs are considered the surplus of blood. Their condition (colour, shape, growth, texture and density) is related to the condition of the brain and marrow that depend on the kidney essence.<sup>2,3</sup> This is why excessive seminal emission will lead to hair loss and consumptive diseases.<sup>7</sup>
- The body hair, including the eyebrows, beard etc., reflect the internal condition of the human body. There is a further distinction between hairs in various body parts.<sup>4</sup> The hair on the head is an expression of the heart and the element of fire; the eyebrows are related to the liver and the element of wood, while the beard depicts the condition of the kidneys and the element of water. In some of the texts, the eyebrows are also related to the lung (metal element), while the beard can also be associated with the gall bladder (wood element).<sup>5</sup>
- Blood is associated with the essence of water and grains; it is produced and transformed in the spleen. Since blood is controlled by the heart, stored in the liver, distributed by the lungs and drained by the kidneys to nourish the whole body, the body hair are actually related to all the zang organs.
- The chong mai and ren mai extraordinary meridians are both associated with the beard, since they reach the upper lip. In Chinese medicine, the eight extraordinary meridians are considered to circulate the essence.

## 2.1. Treatment

In Chinese medical classics, the treatment of hair ailments in general was a sign of expertise among physicians. The condition of the hair could also be used by a skilled physician for correct diagnosis and prognosis.<sup>6</sup> The main syndromes causing hair problems are kidney qi deficiency and kidney essence deficiency. Other syndromes include pathogenic wind, due to blood heat, deficiency or stasis, but since they are not directly connected to the kidney, they are not going to be examined here.

**2.1.1. Kidney qi deficiency.** The kidney qi is the general expression of the kidney's strength and ability to fulfil its function. Especially important for the understanding of this concept is the primordial qi (*yuan qi*), part of which is inherited by the parents. The Chinese herbal pharmacopoeia includes several natural substances that are considered kidney qi tonics, usually included in the categories of herbs that tonify the qi (e.g. *shan yao*, root of *Dioscorea opposita* Thunb.), nourish the blood (e.g. *shu di huang*, root of *Rehmannia glutinosa* (Gaertn.) Steud.), tonify the kidney yang (e.g. *lu rong*, Cornu Cervi Parvum) or nourish

the kidney yin (e.g. *nu zhen zi*, the fruit of *Ligustrum lucidum* W. T. Aiton). Chinese herbal formularies include several interesting prescriptions in the categories of nourishing the yin and tonifying the yang. Examples of formulas in the first category are the *Zuo gui yin* (Restore the left kidney decoction), for kidney yin deficiency and most importantly the *Qi bao mei ran dan* (Seven-treasure special pill for beautiful whiskers), mentioned for the first time in the *Yi Fang Ji Jie* (Analytic Collection of Medical Formulas), by Ang Wang (1615-1694), and used primarily for treating premature greying of the hair, through nourishing the kidney yin and liver blood. This formula includes *he shou wu* (root of *Polygonum multiflorum* Thunb.) probably the most famous Chinese herb for restoring hair vitality.

**2.1.2. Kidney essence deficiency.** The essence deficiency presents the symptoms and signs of diseases of the five zang and six fu organs, resulting in exhaustion of the body, with blurred vision, withered teeth and hair loss.<sup>7</sup> There are two major categories of suitable substances in Chinese materia medica: herbs nourishing the essence and those that stabilise and bind (styptic action). Some, like *yi zhi ren* (the fruit of *Alpinia oxyphylla* Miq.) have both properties, warming the kidney and retaining the essence, being particularly useful for spermatorrhea or urinary incontinence. For example in *Jin Gui Yao Lue* (Synopsis of Prescriptions of the Golden Chamber), it is mentioned that the *Gui zhi jia long gu mu li tang* (Cinnamon Twig Decoction, with Dragon Bone and Oyster Shell) could be used to treat hair loss due to seminal loss.

Some formulas can be used for either category. For example in the *Wai Tai Mi Yao* (Medical Secrets from the Royal Library), the formula *Zhu shi ren shen wan* (Shen Shi's Ginseng Pill) is used to treat hair loss caused by kidney qi deficiency, failure to store the essence or seminal loss, due to consumptive diseases.

According to the records of ancient texts, as well as the *Zhong Yao Da Ci Dian* (Great Dictionary of Chinese Medicine), there are 24 herbs that can be used for hair growth, belonging to several categories: regulating qi and blood, clearing heat, eliminating dampness and warming the interior. According to the different types of hair loss, the herbs can be categorised as tonics, diaphoretics, qi and blood regulating, clearing the heart, eliminating dampness and warming the interior. Half of them (12 herbs), enter the kidney meridian, which affirms the importance of this organ in treating hair loss.

Actually, the records of formulas for hair loss in the ancient texts are scattered, with many repetitions. More than 400 books, from various historical periods, were in-

**Table 1.** The most regularly found herbs in the texts of the three historical periods of Chinese medicine.

Chinese terms	Period Herbs Binomial name and plant part	266–907		960–1368		1368–1911		Total
		No of formulas External		No of formulas External	Internal	No of formulas External	Internal	
Bai zhi	<i>Angelica dahurica</i> (Fisch. ex Hoffm.) Benth & Hook (root)	17		11		31		59
Fang feng	<i>Saposhnikovia divaricata</i> (Turcz.) Schischk. (root)	15		8		33		56
Sesame oil	<i>Sesamum indicum</i> L. (seed)	15		16		42		73
Man jing zi	<i>Vitis trifolia</i> L. (fruit)	14		17		43		74
Fu zi	<i>Aconitum carmichaeli</i> Debx. (prepared lateral root)	14		13	6	25	12	70
Song ye	<i>Pinus</i> spp. (leaf)	10		7		20		37
Xin yi	<i>Magnolia</i> spp. (flower)	10		5		19		34
Sheng Lou Le	<i>Ocimum tenuiflorum</i> L. (herb)	9		11		27		47
Chuan xiong	<i>Ligusticum wallichii</i> Franch [syn. L. chuanxiong Hort.] (root)	8		7		18	15	48
Ce bai zhi jie	<i>Platycladus orientalis</i> (L.) Franco [syn. <i>Thuja orientalis</i> L.] (twig)	8				25		33
almond	<i>Prunus dulcis</i> (Mill.) D.A. Webb (seed)	5						5
Sheng ma	<i>Cimicifuga foetida</i> L. (rhizome)	4						4
Gao gui chun huang ju	<i>Chamaemelum nobile</i> (L.) All. (flower)			5				5
Huā jiāo	<i>Zanthoxylum simulans</i> Hance (fruit)			9		25		34
Sang bai pi	<i>Morus alba</i> L. (root bark)			12		16		28
Liao Xi Xin	<i>Asarum heterotropoides</i> F. Schmidt var. <i>mandshuricum</i> (herb)			6		21		27
Gan song	<i>Nardostachys jatamansi</i> (D. Don) Candolle (syn. <i>Nardostachys chinensis</i> Batalin) (root)			5		19		24
Gan cao	<i>Glycyrrhiza uralensis</i> Fisch. ex DC (root)				10		25	35
Sheng di huang	<i>Rehmannia glutinosa</i> (Gaertn.) Steud. (root)				9		21	30
Shu di huang	<i>Rehmannia glutinosa</i> (Gaertn.) Steud. (prepared root)				7		19	26
Ren shen	<i>Panax ginseng</i> C.A. Meyer (root)				8		20	28
Yuan zhi	<i>Polygala tenuifolia</i> Willd. (root)				5		11	16
Fu ling	<i>Wolfiporia extensa</i> (Peck) Ginns [syn. <i>Poria cocos</i> (Schw.) Wolf] (mushroom)				8		22	30
Gan jiang	<i>Zingiber officinale</i> Rosc. (root)				8	13	19	40
Huang qi	<i>Astragalus propinquus</i> Schischkin [syn. <i>A. membranaceus</i> (Fisch.) Bge.] (root)				6		15	21
Long gu	<i>Fossilia Osis Mastodi</i>				6			6
Mai men dong	<i>Ophiopogon japonicus</i> (L.f.) Ker-Gawl. (root)				12		14	26
Bai shao	<i>Paeonia lactiflora</i> Pall. (syn. <i>Paeonia albiflora</i> Pall.) (root)				6		20	26
Zào jiā	<i>Gleditsia sinensis</i> Lam. (fruit)					12		12
Guǎng huò xiāng	<i>Pogostemon cablin</i> (Blanco) Benth. (herb)					19		19

**Table 1.** (continued) The most regularly found herbs in the texts of the three historical periods of Chinese medicine.

Chinese terms	Period Herbs Binomial name and plant part	266–907		960–1368		1368–1911		Total
		No of formulas External		No of formulas External Internal		No of formulas External Internal		
Mo han lian	Eclipta prostrata (L.) L. (herb)					16		16
Dang gui	Angelica sinensis (Oliv.) Diels (root)						26	26
Bu gu zhi	Psoralea corylifolia L. (fruit)						8	8
Bai zhu	Atractylodes macrocephala Koidz. (rhizome)						12	12
Niu xi	Achyranthes bidentata Blume						19	19
Lu jiao jiao	Colla Cervi Cornus						15	15
La jiao	Capsicum annum L. (fruit)						6	6
Rou cong rong	Cistanche deserticola Ma (herb)						8	8
Tu si zi	Cuscuta chinensis Lam. (seed)						12	12
Shi hu	Dendrobium nobile Lindl. (stem)						6	6

vestigated to collect the interesting formulas and medical substances used. The main list includes 44 famous formulas, which appear in multiple records. Most of them (80%) tonify and nourish the kidney qi and replenish the essence and marrow. Some of the works have a wealth of information on the subject, including formulas for both oral administration and external use, such as the *Xi tou fa* (Shampoo Formula), the *Mo fa gao* (Hair-massage Cream), the *Xi fa ju hua san* (Hair-washing Chrysanthemum Powder) and the *San sheng gao* (Three Sages Paste), providing us with a vast field for future herbal research. The best example comes from the Ming Dynasty, when Li Shizhen recorded nearly 60 substances that treat hair loss, in his monumental *Bencao Gangmu* (Compendium of Materia Medica, printed 1596).

Several stories in these texts became a standard for Chinese Medicine. *Gu Jin Yi An An* (Interpretations of Ancient and Modern Medical Records 7) describes the successful treatment of a patient suffering from hair loss due to diet, labour and anger, with the administration of the formula *Bu zhong yi qi* (Tonifying the Middle and Replenishing Qi) plus *mai men dong* (root of *Ophiopogon japonicus* (L.f.) Ker-Gawl.) and *wu wei zi* (fruit of *Schisandra chinensis* (Turcz.) Baill.), together with the formula *Liu wei di huang wan* (Six Ingredients Including Rehmannia), plus *wu wei zi*.<sup>8</sup> Another story involves the treatment of a case of eyebrow loss, treated with “one or two pieces of *Lu jiao jiao* (deer antler gelatine, Colla Cervi Cornus) with wine for a year”, a remedy suggested to him by an alchemist.<sup>8</sup> In *Bencao Jing Ji Zhu* (Annotations to the Divine Husbandman’s Classic of the Materia Medica, c. 500 AD), there were 12 herbs, including Chinese taxillus, Sichuan pepper, simple leaf shrub chastetree fruit, white mulberry root – bark, leaf of

oriental variegated coralbean, hemp seed, root of Chinese date, pine needle, wild goose fat, horse fat, lard, and chicken fat; and in *Bencao Gangmu*, there were more than 60 herbs for treating hair loss.

The formularies were roughly separated into three major historical periods:

- From the Jin to Tang dynasty (266 CE–907 CE)
- The Song and Yuan dynasties (960–1368) and
- The Ming to Qing dynasty period (1368–1911).

In the first period, 58 formulas for hair loss treatment were found in four important texts, including 51 external formulas and 7 internal. Most of them came from *Wai Tai Mi Yao* (27 external and 4 internal). The main syndromes addressed were consumptive disease, blood deficiency and qi deficiency. More than 20 formula books from the second period were studied, with 74 compound drugs, including 46 external and 28 internal formulas. Most of the formulas of this period were collected from *Tai Ping Sheng Hui Fang* (31) and *Sheng Ji Zong Lu* (11). The Ming Dynasty made unprecedented achievements in formula books, including the *Pu Ji Fan*, the largest formulary in Chinese history. Over 30 important books on formulas and related surgical subjects were investigated, to collect a total of 265 formulas for hair loss, including 178 external and 87 internal formulas. More than half of them were recorded in the abovementioned *Pu Ji Fang* (142) and *Bencao Gangmu* (33). The Table contains the most regularly found herbs in the texts of the three historical periods of Chinese Medicine. It is interesting to note that the materia medica – 40 ingredients in total – can be roughly distinguished in

external (21) and internal (22) groups. Especially the first nine herbs on the table 1 are common ingredients in all historical periods (e.g. *bai zhi*, *fang feng*, *man jing zi*). In the group of internal ingredients, there are herbs like *gan cao*,

*sheng di huang* and *shu di huang*, *ren shen*, *bai shao* and *dang gui*, which are quite common in TCM use. Only three herbs are recommended for both external and internal use: *fu zi*, *chuan xiong* and *gan jiang*.

## ΠΕΡΙΛΗΨΗ

### Έρευνα όσον αφορά στα νεφρά και την απώλεια μαλλιών με βάση την αρχαία κινεζική ιατρική βιβλιογραφία

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Το «Κλασικό του Κίτρινου Αυτοκράτορα» (*Huang Di Nei Jing*) εμπεριέχει τις θεμελιώδεις ιδέες του Κινεζικού ιατρικού συστήματος για το ανθρώπινο σώμα. Οι βασικές του έννοιες βασίζονται στην ερμηνεία των φυσικών ρυθμών και της ανθρώπινης φυσιολογίας. Στο πρώτο μέρος του έργου, με τον τίτλο «Απλές Ερωτήσεις» (*Su Wen*) υπογραμμίζεται ότι οι νεφροί κυβερνούν γενικώς την ανάπτυξη και αποθηκεύουν την πεμπτούσια (*jing*), ενώ η εξωτερική τους έκφραση είναι οι τρίχες. Το qi των νεφρών σχετίζεται με την παραγωγή και ανάπτυξη των τριχών, καθώς και με τις παθήσεις τους, όπως η τριχόπτωση και το γκριζάρισμα. Με γνώμονα τη σχέση με τους νεφρούς, εξετάστηκαν περισσότερα από 400 Κινεζικά ιατρικά βιβλία, για να επιλεχθούν οι φαρμακευτικές ύλες και οι συνταγές που συνιστώνται για τη θεραπεία της τριχόπτωσης, από τους Κινέζους ιατρούς του παρελθόντος. Αυτός ο μεγάλος όγκος πληροφορίας κατηγοριοποιήθηκε σε τρεις ομάδες, σύμφωνα με την ιστορική περίοδο και παραλληλίστηκαν τόσο τα απλά, όσο και τα σύνθετα φάρμακα, ώστε να δημιουργηθεί ένας κατάλογος με πιθανούς υποψηφίους για μελλοντική έρευνα. Πράγματι, μια σχολαστική εξέταση αυτών των κειμένων από τις παλιές δυναστείες αποκάλυψε έναν τεράστιο πλούτο ιδεών για την παθογένεια των μαλλιών και τριχών, καθώς και συνταγών για τη θεραπεία τους. Αρκετές από αυτές τις μεθόδους θρέψης των μαλλιών φαίνεται να έχουν επιστημονική και πρακτική αξία.

**Λέξεις ευρητηρίου:** Αρχαία κινεζική Ιατρική, Εσωτερικός κανόνας του Κίτρινου Αυτοκράτορα, Νεφρικό qi, *Su Wen*, Τριχόπτωση

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