

Commentary

评论

Research and Practice of External Targeting Transdermal Delivery of Traditional Chinese Medicine

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中药外靶向透皮 精准给药的研究与实践

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Abstract

"Precision medicine" as the next generation theory for diagnosis, treatment, and technology, will lead a new era of medicine. In 2011, the American medical profession introduced this new concept. On January 20, 2015, President Obama proposed the idea of "Precision Medicine Program". In February 2015, China's President Xi Jinping also require the Ministry of Science and Technology and the National Health Commission to set up China's precise medical strategy expert team and expert committee. On December 11, 2015, "China's individual medicine -Precision Medical Science Industry Alliance" was formally established in Shanghai, marking the concept has been officially launched in China. The concept of accuracy should include two aspects, namely "accurate diagnosis" and "precision treatment." The former need to go deep into the level of gene polymorphism and the level of pathological somatic mutation, and also requires "gene sequencing" technical support; the latter requires "targeted drug delivery" technical support.

摘要

“精准医学”作为下一代诊疗理论与技术,将引领一个医学新时代。美国医学界在2011年首次提出了这一新概念,2015年1月20日奥巴马总统又在美国国情咨文中提出“精准医学计划”。我国习近平主席也在2015年2月批示科技部和国家卫计委,要求国家成立中国精准医疗战略专家组和专家委员会。2015年12月11日“中国个体化用药—精准医学科学产业联盟”在上海正式成立、标志着这一概念在我国业已正式启动。其概念准确地讲应包括两方面,即“精准诊断”和“精准治疗”。前者需要深入到基因多态性的层面及病态体细胞突变的层面,而且需要“基因测序”技术支持;后者则需要“靶向给药”技术支持。

However, as the mainstream of modern medicine, genetic science has its limitations. Professor Liu Zongzheng of Harvard University has pointed out that the human body has over 30,000 genes; of which, over 20,000 are associated with heart diseases. One of his research projects on heart failure is associated with

但是,作为现代生物医学的主流,基因科学也有其无奈。哈佛大学华裔教授刘宗正说,人体共有三万多个基因,其中两万多个与心脏病相关。而他研究的有关心脏衰竭的一个子项,就与二百五

over 250 heart disease-related genes, suggesting that the application of gene therapy in the clinics is not yet practicable (United Daily News, 7 August 2001). Studies in recent years have shown that a majority of top 10 causes of death are caused by the poor circulation. Thus, "precision medicine" starts with blood circulation is a wise strategy. Moreover, China's traditional medicine are more focused on "blood" circulation during the past thousand years, which is the solid foundation of our study.

1. Chinese medicine by pulse diagnosis and precise treatment

The human blood circulation is a huge circulation network, which flows out of the aorta and reach three billion branches after thirty times of bifurcations. For circulatory crises, the method of Western medicine is interventional therapy, while the traditional Chinese medicine is the early detection based on pulse diagnosis, conservative or external therapy to build strength and reduce pain.

In recent years, Dr. Wang Weigong in Biophysics of Johns Hopkins University, has developed a pulsed diagnostic apparatus after 30 years of research on the meridian of TCM. He has analyzed the clinical mass diagnosis and found that it is a resonance wave that drives a huge blood circulation network. The heart pumps out of the blood and generates kinetic energy, which hits the wall of the arteries to generate elastic wave potential energy, i.e., the resonance wave. It is the concept of Chinese medicine, "Qi". The resonance frequency of systemic blood circulation has 12 types, which are connected to 12 different organs of the body. This is what ancient Chinese ancestors called "twelve meridians". It is believed that the meridian is not a fictional term, but an arterial band, a vein zone and dozens of points (also known as the acupuncture points) of the organization, and the twelve kinds of resonant frequency characteristics connect into the blood circulation system.

The characteristic resonant frequency of twelve meridian systems can be determined by pulse diagnosis apparatus. This is like installing a "positioning and navigation system (GPS)" on a large circulatory system in the human body. It can be measured in vitro with the pulse of the twelve meridians of the human body resonance frequency spectrum and health standard spectral comparison that can accurately identify the location and extent of lesions in the circulatory system to make "accurate diagnosis." The meridian system and their associated acupuncture points (acupoints) can be also used in vitro for transdermal drug delivery along the circulatory system channel navigation to the

五十个基因相关!这说明了基因疗法在临床治疗上的应用还不切实际(2001年8月7日《联合报》)。而近年各国现代重大流行病学调查分析的十大死因,大部分与人体循环不良有关。因此“精准医疗”的研究从血液循环入手也不失为一良策。更何况我国几千年传统医学就更讲究“气血”循环,这为我们的研究打下了坚实的基础。

一、中医体外循经脉诊与精准治疗

人体血液循环是一个庞大的循环网络,血液由主动脉出来,经过三十几次分叉,到了微血管已有三十亿的分支。对于循环病,西医的专长是危机处理介入治疗;而中医的长处是以脉诊检视早期发现,保守治疗,外治改善,减少痛苦。

近年,美国霍普金斯大学生物物理学博士王唯工,经过三十年对中医经络的研究,发明了脉诊仪,对临床海量诊断观察分析,认为推动庞大的血液循环网络的是共振波。其是由心脏跳动挤出去的血液动能,在动脉转弯处撞击大动脉壁转换成弹性波动势能,即共振波。它就是中医概念中的“气”。并且全身血液循环中的共振波的频率只有十二种,它们各连接着身体中十二种脏腑的其中一种。这又和我国几千年前上古时代,祖先提出的“十二经络”不谋而合。因此他提出人体经络并非是找不到的“虚构”,而是由一条动脉带和一条静脉带以及数十个穴位(也有称穴道)的组织,并以十二种各有的共振频率为特征连接成的血液循环系统。

十二条经络系统的特征共振频率可以由脉诊仪测定,这就为人体庞大的循环系统安装上了“定位导航系统(GPS)”。它可以通过体外用脉诊仪测定人体十二条经络的共振频率谱图与健康标准谱图比对,从而可精准定位病灶在循环系统中的位置和程度,实现“精准诊断”。同时也可以利用经络系统中体外的穴位(穴道)和归经药物透皮给药(内病外治)沿

lesion, to achieve "precision treatment" and early disease prevention.

2. Meridian is a high-speed path for external targeted transdermal drug delivery

As early as in the "Eighth Five-Year Plan" and "Ninth Five-Year Plan", the research projects of the meridian were given great support, and the scientific methods of multi-path and multi-methods were verified by the meridians route and its variation functions, including electrical characteristics, magnetic properties, calcium ion concentration by meridian changes in low-frequency sound transmission through the meridian. Radioactive isotope migration through the meridian and infrared radiation trajectory meridian have shown such phenomena and have reached to a similar conclusion: the meridian is not the imagination of our ancients, but the objective existing phenomenon of life. The essence of the meridian is the energy-information flow with "qi and blood" meridian running with similar quantum characteristics. Meridian quantization channel; although it is not the formation of an independent biological entity, it is a combination of physical tissue in vivo carrier channel.

Meridian is the oldest and most advanced system. More than two thousand years ago, the classic Chinese medicine book "Emperor" and Mawangdui unearthed ancient literature records had defined the twelve meridians as the body positioning system of Chinese medicine. Meridian is the general term for meridians and pulse. Meridian is the meridian system of longitudinal lines. A network means that collaterals is the meridians of the branches, cross-crossing, the network body reaching every part of the body. Meridian contacts viscera limbs, communicates with the whole body, and regulates the body parts of the channel through the operation of the body's "qi and blood". The human body's cross-section and the various organs are determined by the same gene; the human body is determined by the longitudinal meridian. This is like the latitude and longitude positioning system on the earth.

The meridian positioning system separates the human body by twelve meridian divisions; upper, middle, and lower three parts; the left and right sides; limbs, trunk, head, and neck, a total of 22 positioning parts, according to the depth within the body and the specific functions. Each part of the meridian harbors a number of acupuncture points, tissue tenderness points, lymph nodes and tendons on the knot, the skin surface red, hot, swollen, pain points, which makes it possible for treatment and is

循环系统通道导航至病灶、实现“精准治疗”和早期防病（治未病）。

二、经络是外靶向透皮精准给药治疗的定位高速路

我国早在“八五”，“九五”攀登计划中就对经络研究项目给予了大力支持。通过对经脉循行路线及其变化规律的多途径，多方法的现代科学验证，如：循经感传、循经电特性、循经磁特性、钙离子浓度的循经变化，低频声信息的循经传递，放射性同位素的循经迁移，红外辐射轨迹的循经显示等现象的研究观察，都得出类似的结论：经络决不是出于古人的臆想，而是客观存在的生命现象。而经络的实质是具有类似量子特征的“气血”循经运行的物质—能量—信息流。经络量子化通道虽然没有形成独立的生物实体，但它也是生物体内实体组织组合的载体通道。

经络是个最古老而又最先进的系统。说它古老是在两千多年前中医的经典文献《黄帝内经》或马王堆等出土古文献之记载中，就已经将十二经络定为中医的全身定位系统。经络是经脉和络脉的总称。经，有路径的意思，经脉是经络系统的纵行干线；络，有网络的意思，络脉是经脉的分支，纵横交错，网络全身，无处不至。经络通过运行全身“气血”，联络脏腑肢节，沟通上下内外，调节体内各部分的通路。说经络先进是它和基因从纵横两个方向对人体进行了定位。人体的横切面及各个器官都是由相同基因决定的；人体的纵向是由经络决定的。这就象地球上的经纬度定位系统，把人体中的每个器官，每个组织定位得清清楚楚。

经络定位系统把人体按十二条经络系统；上、中、下三个部位；身体的左右两区；按体内的深浅以及功能区分四肢、躯干、头颈、共分为二十二个部位定位。每个部位还有经过此处经络上若干穴位（穴道），组织上的压痛点（阿是穴）、淋巴和筋上的节结、皮肤外表面红、肿、热、痛点等，使中医精准治疗成为可能，这也是外靶向透皮精准给药治疗的理论基

the therapeutic basis of external targeted transdermal drug delivery.

3. Blood-gas resonance is the driving force of accurate transdermal drug administration

The circulatory system of the human body is based on genes as the meridian for the composition of the latitude, very complex and large network. In this network, the force to keep the delivery of nutrients, and to promote blood running power is Qi (resonance), and 12 types of resonant frequency determines the direction and location of the delivery. The trinity of "qi and blood" resonance is the driving force of positioning and navigation of the circulatory system, and is also the carrier of the material, energy, and information flows of the human body.

All lives (animals and plants) are composed of atoms and molecules, in which the electronic movement of electromagnetic interactions forms a living body that produces vibrations and excitations generated by the resonance force, i.e., the human biological energy. It has been reported that the electromagnetic radiation power of the human body is $10\text{mw}/\text{cm}^2$. The entire body has about 100W, but the human heart pressure work (kinetic energy) is only less than 1.4W (2%). It is obvious that it is difficult for the human body to maintain this huge system of the blood circulation system with such low kinetic energy. In fact, the most important driving force for the kinetic energy into the blood vessel walls is the elastic resonance potential energy, Chinese medicine concept of the "Qi". Qi promotes the flow of blood, and the supply of nutrients by the blood support Qi, by the mitochondrial oxidation of cells to provide ATP to capture high-energy electrons to provide energy, while the blood resonance cycle to provide the material and energy delivery.

The cycle of lower animal lives has only one fundamental frequency (FF), the body has only one resonant cavity, and thus, only one resonance frequency. In human-being, organs increase, the resonant cavity also increase to 12 resonance frequencies, according to different needs of the cycle. They are 12 meridians and 12 kinds of organs connected to the characteristics of the spectrum. People in different states of the spectrum changes can read a variety of information to provide accurate diagnosis of the human body and accurate basis for drug administration. Thus, the blood resonance is the carrier of information flow in the human circulatory system. According to the energy of the pulse wave frequency, the entire organization is intercalated with precise

础。更是指导气血共振在全身输送区域或组织或器官的路径蓝图。

三、气血共振是透皮精准给药治疗的导航驱动力

人体的循环系统是以基因为经，经络为纬组成的非常复杂又井然有序的大网。在这个网中，血不停地给人体运送着营养物质，而推动血运行的动力是气（共振），十二种共振频率又决定了运送的方向和位置。气血共振三位一体是循环系统的定位导航驱动力，也是养活人体物质，能量，信息流“三流”流动的载体。

一切生命（动植物）都是由原子和分子组成，其中电子运动产生电磁相互作用组成活的生命体，它们产生的震动和被激发产生的共振作用力即人体生物能。有人实测人体电磁场辐射功率为 $10\text{mw}/\text{cm}^2$ ，人整体有 100W，但人体心脏压差功（动能）确只有不到 2%的 1.4W。显然人体具有三十亿分支，这庞大体系的血液循环系统仅靠这点动能是难以维系的，实际上最主要的驱动力还是靠由动能转化在血管壁上的弹性共振势能，即中医概念中的“气”，即血的运行靠气来推动，而气又靠血运行提供的营养物质，由细胞线粒体氧化反应提供三磷酸腺苷（ATP）捕获高能电子提供能量，气血共振循环为生命体提供了物质和能量输送的保证。

低等动物生命体的循环只有一个频率（基频），全身也只有一个共振腔，因此也就有一条共振频率。动物演化到人类，器官增多了，共振腔也多了。按循环需求不同，已增至十二条共振频率。它们即是人体十二条经络和相连的十二种脏腑的特征图谱，并可以从人在不同状态下特征图谱的变化读出人体各种信息，提供人体精准诊断和精准给药的依据。因此气血共振又是人体循环系统中信息流的载体。按照脉搏各频率中的能量多少，即使在动脉没有闻

calculation, precise adjustment, control blood flow to the region or the number of tissue to maintain the normal operation of life even there is no gate in the arteries.

4. The acupuncture points is natural target of transdermal drug delivery precise treatment

"Precision treatment" is the most direct understanding of "targeted drug delivery." Most of the human disease caused by one or more organs, tissues, cells, pathological changes, which is the therapeutic target. For a long time, physicians have developed a variety of targeted therapies that give drugs to the lesion. For example, the early plaster is a targeting local administration of drugs to a localized disease, while the modern eye drop is a targeted medication for eye diseases. Contraceptive membrane and suppositories to intrauterine and intra-cavity are also targeted drug delivery. The liposomes, nanoparticles, microemulsions and other new drug carriers are also examples of targeted in vivo drug delivery systems. In recent years, targeted drug research is moving from the organ level to the cellular level and molecular level development; from the construction of targeted drug research to functional research, mechanism research, vector research and in vivo process development; from theoretical research and experimental research to clinical research and practical research and development; from passive-targeted drugs to actively targeted drug research and development. The accurate targeting of transdermal drug delivery is a new direction for the development of targeted drug delivery system.

Although the meridian system in the acupuncture points has no independent biological entities, it is in a fixed position on the surface. It is located subcutaneously at the intersection of vein, artery, and micro-vascular rich network accompanied by a high density of nerve fibers. These acupuncture points are arranged along with the meridian with certain distance, but all 12 types share a common characteristic resonance frequency. Acupoint is the largest point of resonance. By pressing the acupuncture points, it can inhibit vibration and the transmission of the pressure wave of the aorta. On the other hand, the acupuncture point is the resonance power station. By stimulate the acupuncture points, it can enhance the transmission of the aortic pressure wave, improve the circulatory system in the state of blood resonance, to achieve the purpose of precise treatment. Now the acupoint has been recognized by the world. The World Health Organization (WHO) published "international standard acupuncture points" in 1991, fully recognizing and standardizing 12 meridians on 361

门, 组织没有分隔的情况下, 也可以精密的计算, 精确的调整, 控制送血到各区域或组织的数量, 用以维持生命体正常运行。

四、穴位(穴道)是透皮精准给药治疗的天然外靶点

“精准治疗”最直接的理解就是“靶向给药”。人类的大多数疾病是人体的某个或某些器官、组织、细胞发生了病理变化, 它们即是病靶。长期以来, 医学家们发展了不同的可将药物给至病变部位的靶向治疗方法。如: 早期的膏药就是靶向体表局部疾患定向给药剂型; 近代的眼药就是靶向眼疾的定向给药剂型; 避孕膜, 栓剂等也是靶向宫内和腔内的定向给药剂型; 现代又发展了脂质体, 纳米粒, 微乳等新型药物载体, 利用体内代谢系统靶向病变部位。目前, 靶向药物的研究正在由器官水平向细胞水平和分子水平发展; 由靶向药物的构建研究向功能研究, 机理研究, 载体研究和体内过程研究发展; 由理论研究和实验研究向临床研究和实用研究发展; 由被动靶向药物向主动靶向药物研究发展。外靶向透皮精准给药研究恰恰是顺应了靶向给药研究发展的新方向。

处于经络体系中的穴位(穴道)虽然没有独立生物实体, 但在体表有固定位置。在其皮下是静脉跟动脉中间的微循环体系, 具有丰富的微血管网, 并与很多神经相伴。它们是以一定的距离一个个排在经络上, 并与十二种中属于自己的那个经络系统有共同的特征共振频率。穴位是共振的最大点, 也就是反节点, 压住穴道, 可抑制振动, 就会抑制大动脉传送的压力波; 反之, 穴道又是共振的加压站, 刺激穴道, 又可放大振动, 就会增强大动脉传送的压力波, 改善循环系统中气血共振的状态, 达到精准治疗的目的。现在穴位已得到世界的承认, 世界卫生组织(WHO)1991年向全球公布的《国际标准针灸穴名》, 已认可了由中医

acupuncture points and 48 Outside singular points established by the Chinese medical community. Acupoints have become a natural external target for precise drug delivery.

The study of the specific effect of acupoints has attracted the attention of the world medical community. China has been included the study of acupoints in the national key basic research and development plan ("973 Plan"). China has made a series of research achievements through the cooperative research of multi-disciplinary research teams in recent ten years: the specificity of meridian effect has been confirmed; the meridian effect is characterized by the cyclical, relativity, persistence and condition; the specificity of the acupoints and the degranulation of mast cells in the acupoints have been elucidated. A series of methods for assessing the specificity of meridian have been established. The results have confirmed the meridian specificity of acupoints. In 2011, the American Acupuncture and Moxibustion Society published the "white paper", recognizing "acupoints specificity" problem as acupuncture research in the most challenging research proposition. ("Twelfth Five-Year" national key publications planning project "Meridian specific research and application" edit by Dr. Liang Fanrong).

5. Channel tropism medication is a transdermal drug delivery guidance for accurate treatment

"Meridian" is the characteristics of traditional Chinese medicine's four Qi, five flavors, lifting classification in the functional expression. The properties of medicine include four "Qi": warm, warm-cool, cold, and hot. Warm is to increase energy; ward-cool is to reduce energy moderately; cold is to reduce energy heavily; hot is increase energy heavily. The five flavors are spicy, sweet, sour, bitter and salty. As the "Nei Jing" stated: "flavors go their favorite", sour first goes to liver, bitter first goes to heart, sweet first goes to spleen, spicy goes to lungs, salty goes to kidneys. The four Qi drugs highlight the energy characteristics of drugs. Five flavor herbs highlight the characteristics of drugs in the human body, and the up and down of the drug is prompted to float drug changes in energy generated by the disease and body reactions. The nature of drug attribution is determined by the characteristics of the drug itself.

However, based on their characteristics, drugs need to choose a meridian to reach the disease and release energy, to resonance "Qi" role, to change the energy distribution within the blood circulation system, adjust the blood vessels to run the

临床确认十二经络上的 361 个穴位（穴道）和 48 个经外奇穴，并规范了表述标准。穴位（穴道）成了外靶向精准给药的天然外靶点。

经穴治疗的特异性效应研究已引起世界各国医界的重视。我国已将其列入国家重点基础研究发展计划（“973 计划”）。我国通过近十几年多学科研究队伍的协同攻关，取得了一系列研究成果：已证实经穴效应存在特异性；总结出经穴效应具有循环性，相对性，持续性和条件性的特点；初步探索了经穴效应特异性的生物学基础，发现穴位状态影响经穴效应的特异性，经穴特异性与穴区肥大细胞等脱颗粒相关；建立了一系列经穴特异性研究模式与方法等。2011 年美国针灸学会发表的“白皮书”也将“经穴特异性”问题列为针灸研究中最具有挑战性的研究命题。（“十二五”国家重点出版物出版规划项目《经穴特异性研究与应用》梁繁荣主编）。

五、归经药物是透皮精准给药治疗的制导利器

“归经”是中药特性四气、五味、升降浮沉分类在功能性的表述。药性的温凉寒热为四气，温就是给身体增加能量；凉就是给身体减少能量；寒就就是身体大量地减少能量；热就是给身体大量地增加能量。药性的辛甘苦酸咸为五味，正如《内经》所言：“五味各走其所喜，‘谷味酸先走肝，谷味苦先走心，谷味甘先走脾，谷味辛先走肺，谷味咸先走肾。’”即四气药性突出了药物的能量特点，五味药性突出了药物在人体内走向特色，而升降浮沉药性则是提示药达病所产生能量改变之余，身体进一步的反应现象。药物归经的实质是药物自身特性决定的。

但是，归经现象的实现，是经过入经的药物按其特性选择某一经络到达病所释放能量，以共振“气”的作用，改变血循环系统内各谐波的能量分配，调整的血管整个系统气血

entire system of blood, improve disease stasis and restore meridian balance. For example, warm or hot drugs to the lung are to increase the pulmonary harmonics in the blood pressure pulse energy, thereby increasing the blood flow and supply to the lung, and providing more nutrients and oxygen, while excluding wastes, so that the lung becoming healthier and stronger. If more blood is needed in the lungs (which can be provided by other compound drugs), lung disease will recover more quickly and precision-guided delivery will be more effective.

Although conclusions come primarily from drug treatment effects of diseases on the meridians of organs, the internal and external governance shares the same principle. The traditional Chinese medicine is more focused on external treatment, i.e. external treatment through meridians, acupuncture points, rather than the direct treatment of internal organs. In fact, external treatment through meridians is more convenient, more accurate, and more effective than the oral administration. The treatment through meridian could have more than one single target (meridian points); it could have multiple external targets and several treatment options on multiple organs suffered from a complex disease. For example, in liver disease, treatment is often needed not only for liver, but also for kidney and spleen at the same time. Chinese medicine is based on a large number of human clinic trials, but the Western medicine is mainly based on animal experiment. In recent decades, more and more medical scientists have used modern technologies to verify the meridian phenomenon of traditional Chinese medicine. Western medicine can use this method to identify the characteristics of the spectrum of drug (Dr. Wang Weigong, Hopkinson University Biophysics), so that all drugs can be precisely delivered to the target.

6. Transdermal drug delivery is the result of integration of traditional Chinese medicine and western medicine

To achieve "precision medicine", Western medicine relies on "genetic diagnosis" and "targeted therapy", whereas Chinese medicine depends on "dialectical" and "meridian on governance". The former is based on the theory of human anatomy, while the latter is based on the core of Chinese meridian theory. The former uses antibodies and even with surgery to fight against the pathogens. The latter applies different strategies to achieve the right body's yin and yang balance with traditional Chinese medical attention. The former specializes in the treatment of organic disease, focusing on the rehabilitation of the human body. The latter focuses on the treatment of functional diseases,

运行, 改善病所瘀堵, 恢复经络平衡。如: 入肺经又是温或热的药, 就是增加肺谐波在血压脉波中的能量。从而增加流到肺中去的血液, 进而增加肺的补给, 提供更多的营养及氧气, 同时排除废料, 让肺更健康, 更强壮。如果血液中多了更多肺需要的养分(可由其它复方药物提供), 那么肺部病所恢复的会更快, 精准制导给药的效果会更好。

药物的归经, 虽然主要是从药物对脏腑经络病症的治疗效果中总结出来的, 但内治外治皆同理。中医比较强调外治, 也就是从体表的经络穴位上治病, 而不强调针对脏腑的直接内治, 事实上外治穴位经络比口服内治更方便, 更精准, 更有效。药物的归经不仅仅是单一外靶点(经络穴位), 还可以是多个外靶点, 归几经而治疗多脏腑病变的复杂病症, 如肝的病, 事实上常需要肝、肾、脾一起治。中医是大量人体实验的结果, 不像西医用动物实验来研究。但近几十年也不断有医学家用现代科学手段不仅证实了中药有归经现象, 西药也存在这一药物特性, 并且可以用此手段特征图谱鉴别药物, (霍普金斯大学生物物理博士王唯工)。使药物真正成为精准治疗的制导利器。

三、外靶向透皮精准给药创新思维是中西医理论融合实践的结晶

“精准医疗”, 西医要靠“基因诊断”和“靶向治疗”来实现; 中医则用“气血辨证”和“经络论治”来调理。前者的理论基础是西医人体解剖学; 后者的理论核心是中医经络学。前者是在尸体的基础上通过解剖系统治病; 后者是在活体基础上通过经络系统治病。前者是对抗医学讲究病原体和抗体的博弈; 甚至不惜动手术; 后者是平衡医学讲究身体的阴阳平衡和阴平阳秘, 全力整体治疗。前者擅长治疗器质性疾病, 注重康复

conditioning the human body as a whole. By the comparison of the Chinese and Western medicine systems, it is not difficult to find that Chinese and Western medicine have their own strengths and there is a strong complementarity between. Traditional Chinese medicine needs to catch-up the modern scientific means from the experience of qualitative descriptions, Western medicine needs to inject the holistic view, system theory, self-adjustment and self-perfect theory of life science.

The innovative thinking of external targeted transdermal drug delivery is derived from our over 30 years of transdermal drug delivery practice based on the core theories of Meridian and Acupoints. Combined with modern experimental techniques, our team developed the traditional Chinese medicine magnetic fluid, molecular gel moxibustion film, the practice of the external target precise drug delivery, and explored the human body target points, meridians, the corresponding distribution of reflex zones, and the applications of precision treatment. For example, the "turmeric extract magnetic fluid molecular gel moxibustion film" is to combine the magnetic inductors FeO-Fe₂O₃ complex magnetic fluid with turmeric extract containing Chinese medicine to form molecular and magnetic fluid gel. After applications on the acupuncture points, meridian lines and reflex zones, the gel forms magnetic biological moxibustion film ing construction of magnetic enhanced, the "three flow" external targeting transdermal delivery result in series of innovative practice products.

Externally targeted transdermal drug delivery not only retains the unique advantages of transdermal dosage forms: the drug does not pass through the gastrointestinal tract or cause the liver's "first pass effect", but also reduces the drug toxicity. Externally targeted transdermal drug delivery has the following advantages: drug releasing slowly, blood concentration stable and balanced, no "peak valley phenomenon", prolonging the drug action time, reducing intake time and improving bioavailability of the drug, easy to use and replace, easily accepted by patients. Overall, this approach can improve the level of precision medicine and targeted drug delivery with additional advantages of the "eight effects" of acupoint and meridian treatment, including [1] Operating qi and blood, [2] build a source of life, [3] balance of yin and yang by two-way adjustment, [4] gene program-controlled and balanced communications between the surface and the body with external treatment, [5] strengthen the body, self-defense, self-stability, [6] activation of vitality, tissue

人体局部; 后者擅长治疗功能性的疾病, 调理人体整体。上述中西医理论体系应用的比较, 不难发现, 中西医学各有所长, 有很强的互补性。中医需要从经验规律定性说明补上现代科研手段定量描述的短板; 而现代的西医则需要注入鲜活的生命科学的整体观、系统论、自我调衡, 自我完善的人体科学理论体系。

外靶向透皮精准给药创新思维就是在我们团队三十多年透皮给药理论与实践的基础上, 注入了中医理论核心经络学说和穴位疗法。结合了现代实验技术手段, 研发了中药磁流体分子凝胶生物灸膜, 实践了外靶向精准给药, 并初步探索了人体外靶点穴位, 经络, 反射区的对应分布, 以及归经中药精准治疗的应用实践。如: “姜黄提取物磁流体分子凝胶生物灸膜”的研发, 就是以含磁感应物 FeO、Fe₂O₃ 复合物的磁流体与含中药姜黄提取物的分子凝胶组成的磁流体凝胶。涂敷在人体穴位、经络脉线和反射区上, 形成磁性生物灸膜, 构建磁性强化了“三流”外靶向透皮精准给药系列创新实践产品。

外靶向透皮精准给药不仅保有了透皮给药剂型的独特优势: 给药途经不经过胃肠道和肝的“首过效应”, 降低了体内毒付作用; 药物经皮缓控释, 血药浓度均衡平稳无“峰谷现象”; 延长药效作用时间、减少用药次数, 提高药物生物利用度; 体外给药, 使用方便, 操作简单, 可随时撤换, 易于为病人所接受, 而且将透皮给药理论与技术提升到精准医疗和靶向给药的层面, 并附加了新的优势, 即穴位与经络治疗的“八大功效”。①营运气血, 构筑生命源泉; ②平衡阴阳双向调整; ③基因程控, 整体调衡; ④沟通表里, 内病外治; ⑤强身固本, 自卫自稳; ⑥激活生机, 组织新生; ⑦通

regeneration, [7] through the righting, and longevity anti-aging. and [8] tone real, and cure all diseases. (Li Dingzhong "modern theory and effect of traditional Chinese medicine meridian").

经扶正，延年益寿抗衰老。⑧调虚实，治百病。（李定忠《中医经络理论与实效的现代研究》）

7. References

1. Gao Huiming, et al. TTS formulation research and development of theory and practice, Tianjin Pharmaceutical, 1996, (3): 1.
2. Luo new et al. Magnetic fluid in the application of medicine progress, East China Institute of Geology, 2003 (4): 397
3. Lu Bin, and so on. New dosage forms and new technologies of drugs, Beijing: People's Medical Publishing, 2005.
4. Liang Bingwen, Gao Huiming, et al. Traditional Chinese medicine transdermal drug preparation technology, Beijing: Chemical Industry Press, 2006.
5. Li academia, and so on. Multi-target drug research and application, Beijing: People's Health Publishing, 2011.
6. Li Dingzhong, et al. Chinese medicine meridian theory and the effectiveness of modern research, Beijing: People's Health Publishing. 2012.
7. Liang fanrong, et al. Research and Application of Meridian Specificity, Beijing: People 's Health Publishing, 2014.
8. Gao Huiming. International anti-refractory disease Union annual meeting, recognizing the multi-target transdermal drug delivery, University of Macau. 2015
9. Wang Wei gong: read through the qi & pulse, Hainan Publishing , 2015.

七、主要参考文献

- 1、高惠明，等。TTS 剂型研究开发的理论与实践，天津药学，1996，（3）：1。
- 2、罗新，等。磁流体在医药中的应用进展，华东地质学院学报，2003（4）：397
- 3、陆彬，等。药物新剂型与新技术，北京：人民卫生出版社，2005。
- 4、梁秉文、高惠明，等。中药经皮给药制剂技术，北京：化学工业出版社，2006。
- 5、李学界，等。多靶点药物研究及应用，北京：人民卫生出版社，2011。
- 6、李定忠，等。中医经络理论与实效的现代研究，北京：人民卫生出版社，2012。
- 7、梁繁荣，等。经穴特异性研究与应用，北京：人民卫生出版社，2014。
- 8、高惠明。国际抗难治疾患联盟首届年会论文，认识外靶向多靶点透皮给药，澳门大学：2015。
- 9、王唯工：看懂经气脉络，海南出版社，2015。