

Patent information analysis of Chinese Medicine against coronavirus pneumonia

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ABSTRACT

With the deepening understanding of the novel coronavirus, we found that Traditional Chinese medicine may be very useful for the treatment of this virus. So we the related patent application and authorization are analyzed, and is about 2020 field of traditional Chinese medicine for the treatment of COVID - 19 sense of patent analysis, this article is mainly to China on the basis of analysis on the authorization of patent application, respectively from the characteristics of patent and several other aspects of the narrative, let us work together, hope can help in the fight against COVID - 19 practices and research provides a good reference, boost the epidemic prevention and control.

Key words: Traditional Chinese medicine; Coronavirus; COVID - 19; Patent; Analysis

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I. INTRODUCTION

On January 12, 2020, novel Coronavirus named by WHO as 2019-NCOV appeared in 2019, and on February 11, 2020, it was named SARS-COV-2 by the committee specially for the international classification of viruses. John Cible, chairman of the Coronavirus Research Group of the International Committee on The Taxonomy of Viruses, said in a report on science's website No. 12 that the name SARS-COV-2 was based on many taxonomic studies, including gene sequencing, and that "there is no link between the name and the SARS disease." "Novel Coronavirus is the same novel as the SARS coronavirus, but not the same novel." Academician Zhong Nanshan no. 9 also said so in an interview with the media.

Many different kinds of virus constitute a large family, the family including the coronavirus, coronavirus is one of them, we now know that the respiratory syndrome (MERS) in the Middle East, the common cold and flu and severe acute respiratory syndrome (SARS) this disease is caused by a coronavirus. Before that, we had never found a novel coronavirus new strain in a human.

In order to find more valuable alternative medicines, we need more channels, there are more ways, because as our ongoing on epidemic prevention and control technology research, the state intellectual property office has quickly organized relevant personnel to carry out the patent information of digging, and around the hot problems and technical difficulties of current short-term research and development, want to try to find more drug treatment, follow-up research work for us to offer help. The novel Coronavirus genome is very similar to that of the NOVEL Coronavirus, which has had large-scale outbreaks such as SARS and Middle East respiratory syndrome. If we want to combat the novel Coronavirus epidemic, we need not only to develop an effective vaccine to inhibit its spread, but also to develop relevant therapeutic drugs to control and eliminate this disease.

This article is about traditional Chinese medicine in the field of patent information, I was through the analysis and statistics and will be coronavirus treatment related patent writing, essay contains the patent, is about the role of traditional Chinese medicine in the fight against coronavirus, then we will discuss the next step is to research direction, in the field of scientific research, as far as possible the fight will be in TCM field coronavirus outbreak provide train of thought, to accelerate the process of vaccine development.

II. ANALYSIS OF NETWORK RESEARCH DATA

2.1 Analysis of network research data

In this paper, the patent of the field of traditional Chinese medicine against coronavirus pneumonia is taken as the research object, and the patent Retrieval and Query platform (SIPO) of the State Intellectual Property Office is used to retrieve the data related to the patent of different Chinese teams against the novel coronavirus in the field of traditional Chinese medicine. Key words: "Traditional Chinese medicine

ANDCoronavirus. The retrieval deadline is June 4, 2020, and the general results are obtained by reading article by article. According to the calculation of Chinese patent applications, a total of 73 patents were finally obtained, of which the first one was filed in 1996 and officially published in 1998.

2.2 Data Analysis

2.2.1 Patent application

According to the survey data, we can conclude that the first patent on coronavirus analysis in the field of TRADITIONAL Chinese medicine was published by Felson Medical Co., Ltd. on May 6, 1998. That is to say, since the spread of SARS virus (" SARS "), people began to pay attention to the role of coronavirus in the field of traditional Chinese medicine. According to the date of the patent application, we can divide the patent applications related to coronavirus in the field of traditional Chinese medicine into two sections, taking the SARS period in 2003 as the segmentation point. We will take 1995-2002 as the first stage and 2003-2020 as the second stage. We can see that there were four patent applications in the first phase and 69 in the second phase.

In the first phase of 1995-2002, as can be seen from Figure 1, there were only 4 patent applications in this phase, and the first one appeared in 1996. Can be seen from the data, at this stage to apply for the patent number is less, the reason may be due to at that time, most research just stop at the research and investigation stage, and the time of the nucleic acid testing technology is not advanced, failed to detect sources of coronavirus, also may be less when everyone to the field of Chinese medicine cognition, thought will be more applied in the clinical medicine research of traditional Chinese medicine, and virus infection is more divided into similar infectious diseases such as influenza, so ignore the traditional Chinese medicine in the treatment of the role of the coronavirus.

In the second phase of 2003-2020, this year, only 2003 is as high as an application for a patent for the 19, in the year 2003, an outbreak of SARS in China (SARS) virus, researchers in China to fight the SARS virus the process, realized in fighting the SARS virus in the field of traditional Chinese medicine, it also inspired the people in the fight will be coronavirus research should strengthen the research in the field of traditional Chinese medicine. In the following years, however, the number of patent applications declined. After 2016, the number of patent applications increased, and in less than half a year in 2020, the number of patent applications exceeded 12.

2.2.2 Analyze the applicant

In this article we can the applicant type can be divided into three kinds, respectively is individuals, enterprises and research institutes, is based on the different characteristics of the applicant, according to the application data we can see that in the enterprise application for a patent accounted for more than half of the total, followed by research institutes, and the number of patent application in individual minimum. This may be because it is difficult to study the coronavirus as a unit of individuals. After all, the study of coronavirus requires a strict experimental environment and a large amount of capital, manpower and material resources, which are difficult to be achieved by individuals. As the subject of market economy, it is more convenient for enterprises to study. Thus we can know that the novel Coronavirus epidemic incident is a public health event. We also hope that the government can fund more research institutes to develop a vaccine as soon as possible.

We can according to the number of patents, and then analyzes the number in order to apply for a patent applicant, we can know from the sequence analysis of the first known as the Institute of Biophysics, Chinese Academy of Sciences, Institute of Biophysics, Chinese Academy of Sciences), Institute of Biophysics, Chinese Academy of Sciences, is the basis of the research of life science research Institute, our country built translational research Institute system, focusing on biological pharmaceutical and in vitro diagnostic; In the second place is tianjin International Biomedicine Joint Research Institute; The third name is Shenzhen Qiwang Investment Co., LTD. In order to protect the applicants of Shenzhen Qiwang Investment Co., LTD. 's investment in clinically effective methods, most of the inventors of this patent come from the respiratory department under this hospital. Thus, we know that Novel Coronavirus has attracted more and more attention in The field of Traditional Chinese medicine in China, and we hope that our study will be successful soon.

2.2.3 Analysis of inventors

By analyzing the inventors, we can also roughly classify the inventors into three types: clinicians, research institutions and enterprises. By analyzing the data, in the year to June 5, 2020, the number of applications in more than five pieces of inventors have eight people, including LouZhiYong and the number of staff - are up to nine pieces, LouZhiYong nowadays as the tsinghua university school of medicine researchers, research a lot of problems, such as highly pathogenic virus infection in the coronavirus and so on the many kinds of virus research and development of effective antiviral drugs is made a certain influence results; Staff - now identity is jointly research institute of tianjin international biomedical dean, he had served as President of nankai university, he is still in the Chinese Academy of Sciences researcher at the institute of biophysics, his multiple identities, at the same time he is molecular biophysics and structural biologists, his main research is

related to human infection, also research on inventing new drugs; Chen Sheng, Qu Jinglai and Gao Xue are all doctors in the respiratory Department of Shenzhen Hospital of Traditional Chinese Medicine. Qi Jigui, Sun Yuna are the legal representative of the enterprise. Thus, professional researchers and clinicians pay more attention to the research problems in this field.

III. ANALYSIS OF PATENT APPLICATION AUTHORIZATION STATUS

There is a certain order in which patents are filed, disclosed, and licensed. Step one, you have to apply for a patent. What is a patent application? It means that the patent documents you want to apply for will be submitted to the State Intellectual Property Office. Under normal circumstances, everyone will entrust a professional patent agency. After a patent is filed, the patent is examined, and after a certain period of time in the State Intellectual Property Office, it is disclosed to the public. That is the disclosure of a patent. It usually takes about 18 months from the time a patent is filed to the time it is disclosed. Finally, after a patent is published, a patent that has been subject to a substantive review by the State Intellectual Property Office and meets the conditions for authorization can be authorized, and the authorized patent becomes legally valid.

Patents are of regional nature. Only those patents that have been applied for and obtained authorization in China can be exercised in China. The contents of public documents that have not been applied for in China or have not been authorized even if applied for in China will become public knowledge. In order to prepare researchers for the next step of research, and in order to successfully prevent and treat COVID-19 in the field of Traditional Chinese medicine, we must understand the current licensing and legal status of patent applications, especially those submitted in China and related to the novel Coronavirus infection treatment. Only then will we be able to take the next step of research and development, building on the patents that we already have, and leveraging those that have become public knowledge that are not licensed or that have expired after licensing.

3.1 Classification patent

We can divide patents into valid patents and invalid patents based on the ownership of the holder.

Effective patent refers to the patent that can still be used after the patent is authorized. Only if the patent is still in the period of legal protection or the patentee has paid the fee according to the relevant provisions, the patent is in a valid state. Invalid patent is to apply for a patent after the authorized patent has gone beyond the statutory protection period and not protected, or is the authorization of the patent in the patent fees due after failing to pay so there is no patent rights, as well as by individual or unit announced after the patent is invalid, the patent and after the patent re-examination board still declared null and void to the loss of the patent right after that. For the technology involved, the invalidation patent is no longer binding on its use.

3.2 Review the situation after the conclusion of the case

After the patent application is disclosed, it needs to wait for substantive review by the Patent Office in sequence, and then be reviewed by the Patent Office in accordance with the patent law before authorization can be obtained. The period after the publication of a patent application and before the end of substantive review is called "pending review", indicating that the outcome of the licensing of such an application is unknown. After substantive examination, a patent application can be divided into several situations. The first is "authorization", that is, the patent application meets the conditions of authorization and is granted a patent right. The patent application becomes an official patent. The second is "rejection", which means that the Patent Office rejects the patent application because it does not meet the conditions for authorization. The third type is "revocation as a matter of fact", in which the applicant fails to reply to the notice of review opinion issued by the Patent Office, which exceeds the corresponding period, and finally results in the patent application being deemed to be withdrawn; The fourth is "main withdrawal", in which the applicant takes the initiative to withdraw the patent application. Of the 73 patent applications submitted by China, 13 have yet to be examined, and the remaining 60 patent applications have all been closed for examination. We can find that Chinese medicine involves the coronavirus treatment of the authorization of patent application rate is higher, it shows that coronavirus relevant researchers of innovation ability is strong, and application quality is higher also, on the other hand also suggests that researchers in related with stronger intellectual property protection consciousness, can think of a patent application for the technical scheme in the first place.

3.3 Influence of experimental data on authorization

In the field of TRADITIONAL Chinese medicine, compared with the existing technology, the technical scheme we request to protect needs to be proved by the specific experimental data recorded in the instructions. In vitro, in vivo, and clinical trials are the types of data that we will be doing. According to the statistics of 60 Chinese patent application specifications that have actually examined and concluded the cases, and the analysis of whether specific experimental data are recorded in the specifications, we know that nearly 88% of all applications have experimental data, and the remaining 12% have no experimental data. Further association analysis with the authorization situation reveals that the authorization rate of the application specification with

experimental data is 64.2 percent; ; The authorization rate of the corresponding application specification without experimental data was 0%. We can also understand that the lack of experimental application described in the technical solution of creativity, and can solve the technical problems faced by it is usually difficult to back proof, so this application authorization is more difficult. Therefore, we should attach sufficient importance to the recording and analysis of experimental data. In the later process of intellectual property protection related to the novel Coronavirus treatment, we could not only provide help for patent examination authorization, but also provide detailed and sufficient information to researchers in this field.

IV. SUMMARY AND SUGGESTIONS

During the COVID-19 epidemic, TCM treatment played a vital role. From the perspective of western medicine, there are no new coronavirus specific drugs for pneumonia, all treatment options are still being explored, some drugs are still in clinical trials, and no vaccine has been developed to treat COVID-19.

From the perspective of TCM, COVID-19 is an epidemic. Therefore, Chinese medicine is still effective in treating COVID-19. Hospitals in Guangdong Province, China have studied 54 kinds of Traditional Chinese medicines, and screened lianhua Qingwen Capsule, Jinzhen Oral Liquid, Reduning Injection, and several antiretroviral drugs to treat novel Coronavirus by using Liushen Capsule. However, whether the specific clinical trial effect will be very good remains to be further verified by our researchers. All regions in China can also refer to some relevant treatment based on syndrome differentiation, according to the different conditions of different people, according to the drug. Because traditional Chinese medicine is treated by people in the treatment process, the treatment plan is not the same for all people, which is more conducive to the treatment and rehabilitation of some patients.

In the prevention and control of COVID-19, Traditional Chinese medicine (TCM) has played its own unique advantages, with remarkable curative effect and irreplaceable role. It is hoped that researchers can make full use of information and information knowledge to find effective methods and drugs that can help treat COVID-19 patients and prevent another large-scale outbreak of coronavirus as soon as possible, and pay attention to the intellectual property protection of innovative scientific research results. Finally, I hope this paper can empower researchers with energy and accelerate the drug development process. May we soon overcome novel Coronavirus!

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