

Editorial

The Chinese-Italian role in the International Society of Cosmetic Dermatology

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key words: covid-19, wealth, air pollution, China medical university, la Sapienza University, Academy of History of Healthcare Art

Abstract

Climate is changing, and the time to act is now. The worldwide increase of greenhouse gas (GHG) emissions and the many deaths seen during the COVID-19 pandemic, caused by an unknown virus and pollution, has highlighted the inability and unwillingness the States had to protect its citizens. Thus, it is to underline that changing Climate and nature loss have inextricably linked each other, and citizens need to be dealt with by the next pandemic or crisis. Therefore, the urgent necessity to slow down the negative effects of these emissions by the production

and use of nature-oriented ingredients plastic-free and sustainable productions, contemporary ameliorating the public healthcare structures; this is the goal of the agreement signed between the dermatological department of the First Hospital of the China Medical University of Shenyang and the engineering department of La Sapienza University in Rome, Italy. The incoming project of twinning between China Medical University and the Academy of History of Healthcare Art in Rome aims to obtain better wealth for Chinese and Italian citizens.

Introduction

China is the first major economy returning to business after the worldwide COVID-19 pandemic while air pollution is rising to pre-pandemic levels, despite the government Programs to protect the environment and the people's request to prioritize a green recovery (Fig. 1) (1, 2). So naturally, the pollution rebound is expected in

the EU, USA, and worldwide when the economy starts to recover production and transport without changing the way of producing and consuming. Thus, it is necessary to take the right measures to ensure that air quality remains at lockdown levels, prioritizing, for example, clean energy production and reducing waste.

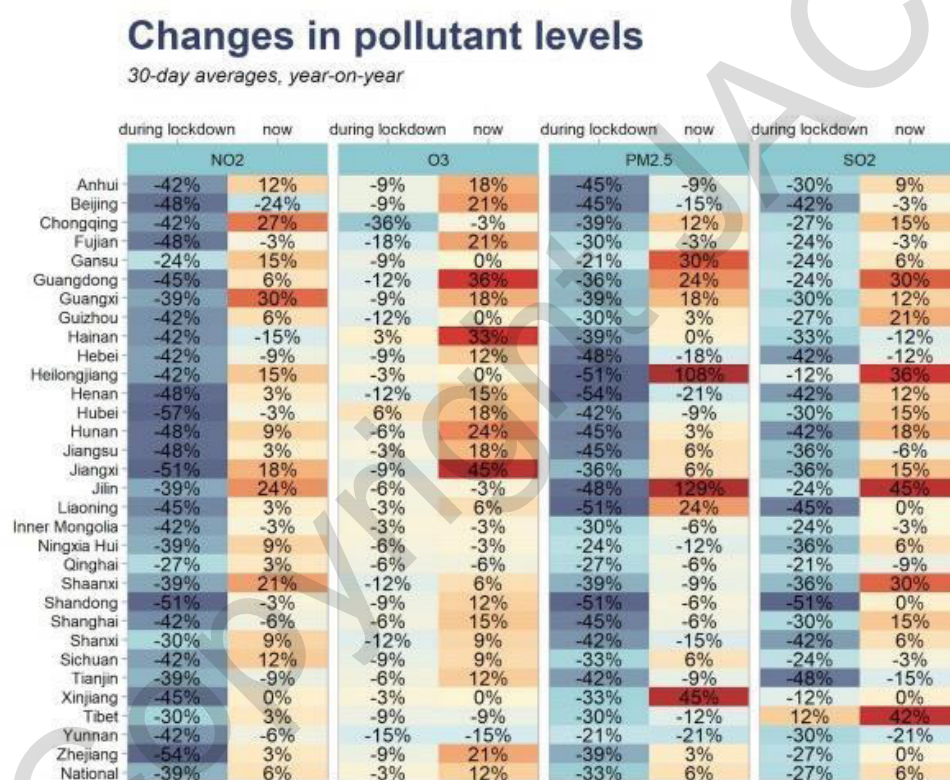


Fig. 1. Pollutant level in different Chinese cities, during and after COVID-19 pandemic (Source: CREA).

The Chinese reported environment negative effects appear to be driven by industrial emissions and petrol consumption.

However, it is not to be forgotten that China is the world's second-largest economy accounting for about 16% of its GDP. Since 2014, it surpassed Japan and the European Union, becoming the second-largest performer of R&D also, by an

expenditure that rose from about USD 9 billion in 2000 to USD 293 and 468 billion in 2018 and 2019 respectively (3).

Moreover, it has been the world's largest producer of industrial goods, accounting for over a quarter of total manufacturing value-added in 2016 by an amount of USD 4.5 trillion, compared to the European USD 3.7 trillion, United States USD

3.5trillion, and BRICS economies USD 1.7 trillion (3).

At the moment, it isn't clear to what extent the COVID-19 crisis will influence the new Chinese 5-year economic plan, also if it is supposed that more emphasis will be placed on bolstering medical systems, public health emergency response capabilities, and life science in general necessary to support public wellbeing, education, and the environmental ecosystems, thus going towards a Green Economy (4).

Just for taking this direction, the medical community has a program to realize innovative high-end medical devices to be used in China's

hospitals for diagnosis, prevention, monitoring, surgical intervention, or other medical purposes. The Chinese Medical device sector must be improved to meet the local medical demand of increasing scientific knowledge and Industrial competencies in this important sector, necessary to introduce sustainability and innovation; this is the reason for the many patent applications on medical devices made by Chinese scientists from 1999 to 2015 (Fig. 2) and the framework agreement signed in 2019 between China Medical University (CMU) located in Shenyang and La Sapienza University of Rome, Italy.

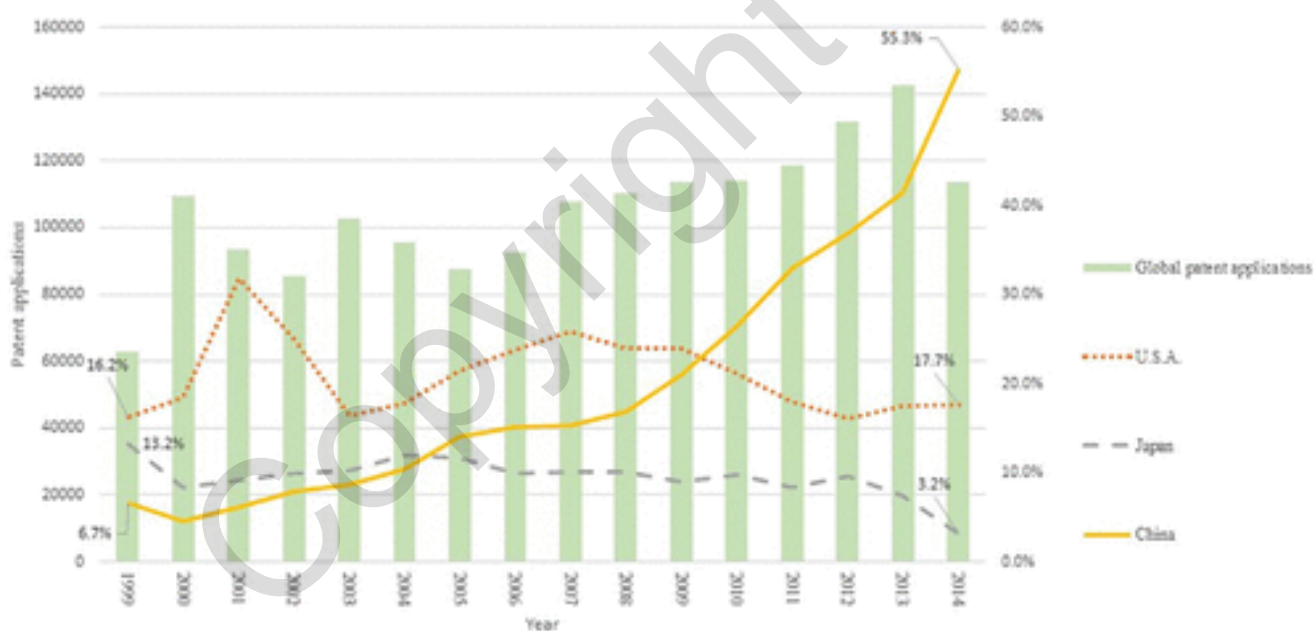


Fig. 2. Global patent applications of medical devices among China, Japan and USA.

This scientific collaboration, promoted and financed by Plan 111 of the Chinese Ministry of Education, is based on the “development of industrial processes for the production of novel nanomaterials targeting medical applications”.

For this purpose, a dedicated laboratory was organized, the Nanomedlab, hosted in CMU under the direction of prof Xinghua Gao, head department of Dermatology of the First Hospital of China Medical University, part of the key

laboratory of Immunodermatology of National Health Commission and Ministry of Education, with the help of prof Marco Stoller, associated professor at the Department of Chemical Engineering of the “La Sapienza University of Rome”.

This Chinese-Italian agreement foresees developing nanomaterials for medical use and teaching and promoting meetings on nanoparticles and smart tissues of biomedical interest for skin regeneration (Fig. 3).



Fig. 3. A lab-group lesson into the dermatological departments' meeting room (Prof Stoller on the left and Dr Xu speaking, on the right).

According to the first obtained results, specialized biodegradable tissues have been realized, which, for their specific physicochemical characteristics, they could be used to make innovative medications, single-use disposable medical dressings, and beauty and surgical masks (5-7).

It is also interesting to underline the in-progress twinning between the China Medical University

of Shenyang and the Italian Academy of History of Healthcare Art, located in Rome.

For this purpose, during a meeting organized into the President's office of this historical Chinese University, the title of Honorary fellow of Italian Academy has been assigned to prof Wen Deliang, President of CMU, as well as prof Hong-Duo Chen and Prof. Xingua Gao, have been appointed as

Correspondent fellows of the Italian Academy (Fig. 4).



Fig. 4. The first official meeting between CMU members, the new lab and the Academy (from left: Prof Yiping Wang, Prof Xu Wu director office of International Affairs, Prof Morganti as Academy direction member, Prof Ying Liu Vice President of CMU, Prof Stoller from La Sapienza University, Prof Gao and Dr Abdu Amer representing the new Nanomedlab).

China Medical University

China Medical University (CMU), currently based in Shenyang, was the first and only Medical school established by the Chinese Communist Party through President Mao Zedong in October 1931, participated in the Red Army's entire 12 500km Long March.

Born by the Union of different Medical institutions located in different Chinese provinces, such as Manchuria Medical College established in 1911 and Muckden Medical College in 1883, CMU had the opportunity to collect different experiences

from different regions and cultures, being also the first University to introduce and joint in China Western and Traditional Chinese Medicine.

Professors and students living in this University have coined the school motto "firm in political belief and outstanding technical skills" and its spirit "heal the wounded, rescue the dying and practice revolutionary humanitarianism". CMU is, therefore, reputed as "the Cradle of Loyal Doctors" and "the Pioneer of Rescuing and Caring in the People's Republic of China".

Thus, by its distinctive medical characteristics, the school has developed teaching and research university degree programs ranging from education, science and engineering to philosophy and management.

Thus CMU, promoted and educated more than 90.000 senior Medical professionals. As a result, many of them became leaders in National and International Health management, contributing to the regional, economic and social development and China's medical and health improvement and innovation.

As an example, Prof Mao Xiaowei, Ministry in charge of National Health Commission, has been a student and vice President of China Medical University.

For this purpose, it is interesting to remember the meeting he took in 2019 in Rome with the Italian Ministry of Health prof Roberto Speranza signing an agreement of cooperation for the years 2019-2021 (Fig. 5) and his surprised requested visit to the Medical Museum of the Italian Academy of History of Healthcare Art (Fig. 6).



Fig. 5. The agreement of cooperation 2019-2021 signed between the Italian Ministry of Health Roberto Speranza and the Chinese

Ministry of Health Prof Mao Xiaowei.



Fig. 6. Visit of Prof Mao Xiaowei, Chinese Ministry of Health, to the Italian Academy of History of Healthcare Art Museum.

In conclusion, with a land area of 2.200 mu and a construction area of 570.000 square meters, CMU has complete functions, advanced facilities and a good environment to build a first-class distinctive high-level medical education and research base (Fig. 7).

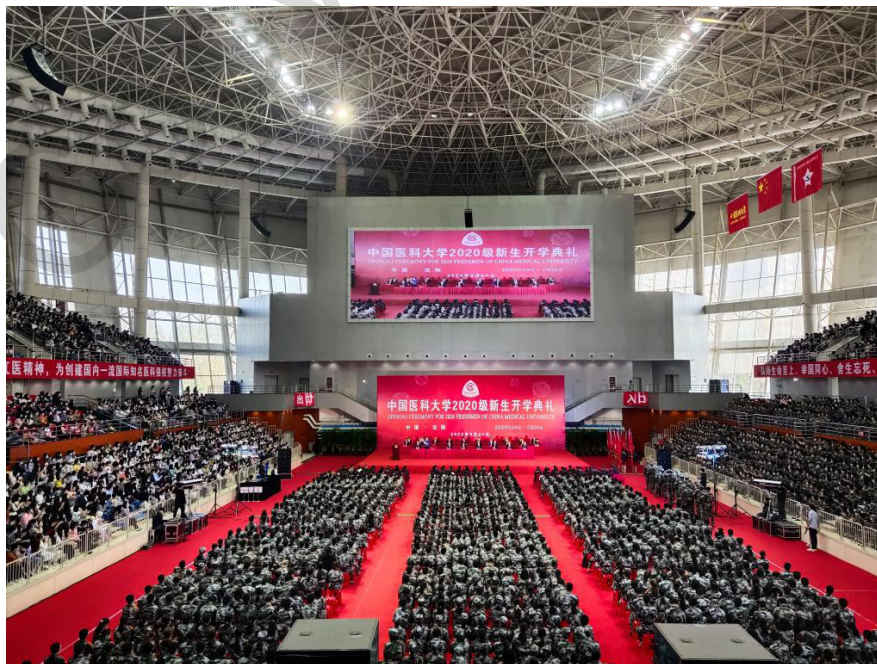


Fig. 7. The 2020 Opening Ceremony of China Medical University.

Conclusion

In the last years, the Chinese Medical device sector has surely made progress in meeting the local medical demands and improving the Industrial competencies by advancement and diffusion of innovation and production sustainability.

Consequently, the sale of the Medical device sector in China totalized around USD 1.9 billion in 2000 and increased to around USD 40 billion in 2015, thanks to R&D capabilities and great investments.

Thus it became the second-largest Medical device market globally after the USA, in pharmaceutical spending also, with USD 117 in 2017 compared to USD 462 in the USA (8, 9).

However, China's consumer market is heavily integrated with the world by a 40% multinational corporations' average in 2017, compared with just 26% in the USA and the imported acquisition of some high-end medical devices of the hospital use (8).

In conclusion, China is making great strides to save the environmental resources and improve the productivity of its economy, even if the results appear insufficient because of the necessity, in all the sectors, to better integrate environmental aspects and political decision-making.

However, the Inter-Countries connections, the continuous investments and the environmental policy followed by the newly promulgated regulations to protect air, water, and soil and the control population growth from alleviating poverty will surely help China to obtain a more sustainable and clean environment, necessary to protect human health and the environment of its citizens (10, 11). It is to remember that air

pollution in China causes more than 1.2 million annual deaths, making COVID-19 more lethal (12). It has been shown that an increase of only 1 microgram/m³ in MP2.5 is associated with a 15% increase in COVID-19 death.

In conclusion, the necessity for increasing the ability to understand and engineer biology, introducing innovative bio-molecules, bio-systems, bio-machines and biocomputing became a must for China and all the World's Countries; this is also the aim of the new collaboration between the Dermatological Chinese Department of China Medical University and the Engineering Faculty of Italian at La Sapienza University.

Advancement in biological Sciences combined with the accelerating development of bioengineering, computing and data processing (13), will certainly have a significant industrial impact. Thus it will be possible to produce innovative drugs, biodegradable medical devices and new products based on bio-nano particles and smart bio-tissues in a program to be realized by this Italy-China scientific collaboration.

We hope the obtained results could be useless to solve the many problems connected, such as the necessity to repair skin wounds and burns in a shorter time and without the formation of hypertrophic wounds or keloids. Moreover, we hope also that the COVID-19 pandemic may inspire climate-friendly actions, benefiting human health and the environment, drastically reducing the air pollution cause of around 7 million yearly deaths, as estimated by World Health Organization (WHO) (14) (Fig. 8).



Fig. 8. Million of deaths are caused yearly from air pollution worldwide.

In conclusion, COVID-19 pandemic and climate risk, having a profound impact on both consumer health and lifestyle, represent similar physical shocks translated into an array of socio-economics impacts (15, 16).

The former is measured in days, weeks, months

and years, while the latter is measured in years, decades, and centuries. Unfortunately, both reduce human health, leading to death. Thus, the need to find a solution, focusing on their microeconomic analogies; this is the goal of the new Chinese-Italian Nanomedlab.

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