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Relationship between the Chinese tobacco industry and academic institutions in China

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Abstract

Objective—To investigate the relationship between the Chinese tobacco industry and academic institutions in China.

Methods—We searched online databases of journal articles published in both Chinese and English for academic institutions in China conducting research with or sponsored by Chinese tobacco companies. We also searched the websites of tobacco companies, their affiliated institutions and academic institutions for reports of collaborations.

Results—The Chinese tobacco industry, in addition to its own strong tobacco research capacity, maintains close ties with an extensive network of academic research institutions and universities to provide both research and training. The Chinese tobacco industry relies heavily upon academic researchers to advance its research agenda and such reliance has grown over time. Most research deals with farming, manufacturing and management issues, but research on ‘reduced harm’ and health effects has increased from 1% of projects in 1983–1987 to 4% in 2003–2007.

Conclusions—Chinese academic institutions should consider the fact that engagement with the tobacco industry, particularly on issues related to health or promotion of tobacco products, could damage their reputations, a concern that has led many leading Western universities to eschew relationships with the tobacco industry. To the extent that the Chinese tobacco industry’s involvement in academic institutions affects tobacco control policy making; it violates Article 5.3 of Framework Convention on Tobacco Control, which China ratified in 2005.

INTRODUCTION

In the United States and other western countries,^{1–6} Thailand⁷ and China,⁸ the private transnational tobacco companies have a long record, dating back to the 1950s, of sponsoring research in universities and similar institutions to create controversy about the dangers of smoking and secondhand smoke and the need for tobacco control policies in order to protect industry markets and profits. The academic research and the network of scientists, physicians and other academics they built in the process played an important role behind this

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effort.¹⁻⁶ This pattern of behaviour was a central element in the ruling, upheld on appeal, of a US federal judge that the major cigarette companies and their research organizations violated the Racketeer Influenced Corrupt Organization Act.⁹ (The tobacco industry defendants appealed to the US Supreme Court in February 2010; the Supreme Court denied the appeal and allowed the ruling to stand, making it final.) This pattern of manipulation of science has led many academic institutions to adopt policies of declining funding from the tobacco industry^{6, 10, 11} and some funding agencies to adopt policies of not awarding grants to institutions that accept tobacco industry funding.¹²

The multinational tobacco companies used similar strategies in Hong Kong in the late 1980s and 1990s, including attempts to involve scientists from China.¹³ As part of its strategies to fight smoke-free legislation in Asia, in 1996 Philip Morris reached out to the state tobacco monopolies in Asia, including the China National Tobacco Company (CNTC), to establish the Asian Regional Tobacco Industry Science Team (ARTIST), which later developed into an industry organization of scientific representatives.¹⁴ Many researchers from CNTC were involved in ARTIST as well as researchers from Chinese academic institutions, including communication on developing 'safer' cigarettes.^{15,16}

Despite the fact that China is the world's largest tobacco market and home to the largest tobacco company, the CNTC, little is known about the relationship between CNTC and university and other academic researchers. CNTC is by far the dominant tobacco company in China, controlling 99.9% of the domestic cigarette market in 2000.¹⁷ CNTC is part of the central government as the State Tobacco Monopoly Agency (STMA). Under the umbrella corporation of CNTC, each province and many cities and towns have their own CNTC branch companies. This massive network monopolises not only the production and sale of cigarettes but also the growing and purchasing of tobacco leaf. As efforts to reduce the burden of tobacco-induced deaths and diseases developed in China, particularly in response to the WHO Framework Convention on Tobacco Control (FCTC), CNTC organized a group of its affiliated research institutions to examine the impact of the FCTC and develop countermeasures to counter the impact that FCTC has in China.¹⁸

China is also following global trends as it develops the cigarette market in an environment of increasing public awareness of the dangers of smoking, as happened in the West decades ago. This growing awareness has created an urgent need for CNTC to develop products to present to the public as 'safer'. To do so, CNTC is relying more than ever on academic institutions to meet its R&D requirements. Therefore, it is increasingly important to understand the nature, extent and implications of linkages between CNTC and academic and scientific institutions in China. It is also important for those working in tobacco control in and outside China to be aware of how these connections can affect the tobacco control policies in China.

METHODS

Using methods similar to those used to study tobacco-related research linkages in the United States¹⁹ and globally,²⁰ Dr Gan searched the websites of CNTC and its branch corporations in each province between January 2008 and July 2009 to identify research institutions affiliated with the tobacco companies and relationships between the tobacco companies and academic institutions that conduct tobacco research, including universities (in which we include specialised institutions that are one level below universities in the Chinese higher educational system, known as 'Zhuanke' in Chinese) and public research institutions that are owned by the government.

A literature search for tobacco-related journal articles was conducted in the China National Knowledge Infrastructure (CNKI),²¹ the largest online database of Chinese language scientific publications, using the search term 'tobacco' OR 'smok*' in Chinese. We also searched Web of Science²² and PubMed²³ for tobacco-related research articles published in English language journals using the search term 'tobacco' OR 'smok*'. We had three inclusion/exclusion criteria: (1) Research articles had to involve mainland Chinese academic institutions; we required 'China' in the address of co-authors and excluded institutions from Taiwan, Hong Kong and Macao. (2) We set 1983, the year after CNTC was established, as the earliest date for our search, and 2007 as the latest date. (2007 was the last complete year in CNKI when the literature research was conducted.) (3) The article had to be relevant to tobacco. The topic of each journal article was determined through the abstract and if necessary, the full text using the following categories: tobacco farming, tobacco processing and cigarette manufacturing, quality assessment and quality control of tobacco leaves and cigarettes (on levels of tar, nicotine and other chemicals), topics on cigarette sales and tobacco company management, less harm and low tar (including health effects generally) and other aspects of tobacco research (eg, history of tobacco growing, reports on CNTC regulations and standards).

This process yielded 14 603 articles from the Chinese CNKI database and 863 articles from the English databases Web of Sciences and PubMed. The affiliations of the author(s) of each article were identified and coded as tobacco companies, universities, public research institutions and other entities. Declaration of the sources of funding was also identified in each article.

RESULTS

CNTC's research and development capacities

CNTC and many of its branch corporations have their own research institutes (figure 1 and table 1; The institutes listed in table 1 are those with websites, so it is not a comprehensive list of all the tobacco research institutes.) These institutes are affiliated with and supported by CNTC or the local tobacco company and sometimes by both.

At the national level, CNTC owns Zhengzhou Tobacco Research Institute (ZTRI).²⁴ ZTRI's history dates to the early 1950s.²⁵ When Chunghwa Tobacco,²⁶ a tobacco company owned by the Kuomintang government, and Yizhong Tobacco,²⁷ owned by British American Tobacco, were nationalised by the Communist government in 1953, 4 years after the foundation of the People's Republic of China in 1949, the tobacco research divisions of both companies were merged to form the Technology Research Division of the new Shanghai Tobacco, which evolved into ZTRI. In 1956, the Ministry of Light Industry established its Office of Tobacco Industry Research on the basis of the Technology Research Division of Shanghai Tobacco.²⁶ The Office of Tobacco Industry Research expanded before merging into CNTC in 1985, 3 years after CNTC's founding.²⁶ ZTRI continued to grow and has become one of the only two tobacco research institutions at the national level in China.

CNTC has branch corporations in each province and in many cities and towns. Many of these CNTC branch corporations have their own tobacco research institutes to support local tobacco farming and product development (table 1). Many of the research laboratories directly affiliated with CNTC are housed in these local tobacco research institutes. Since CNTC is also a central government agency (STMA) and local tobacco corporations are also the tobacco agencies of local governments, CNTC and its branch corporations as well as their affiliated tobacco research institutes are all supported by government funding.

CNTC's relationship with academic institutions

Apart from the research institutions that are part of the tobacco company system, CNTC also maintains a close relationship with many academic institutions outside the tobacco company system (figure 1 and table 1). Table 1 lists the major academic research institutions and universities with tobacco ties. Most academic research institutions and universities in China and all those listed in table 1 are government owned. The Chinese Academy of Agricultural Sciences (CAAS),²⁸ the highest level public agricultural research institute in China, established its tobacco research institute in 1958 in Qingzhou. In 1987, CNTC and CAAS began to co-administer this institute and added another name 'Qingzhou Tobacco Research Institute (QTRI) of CNTC' to its official title.²⁹ QTRI has the second largest number of journal articles (625 articles), second only to Yunnan Tobacco Research Institute (671 articles), a tobacco research institute owned by Yunnan Tobacco Monopoly Bureau.

CNTC has also maintained a close relationship with universities. Henan Agricultural University established the first tobacco major in China in 1975.³⁰ In 1984, CNTC began to support Henan Agricultural University in establishing tobacco farming degree programmes that granted undergraduate, Masters and PhD degrees as well as offered continuing education.³⁰ In 1997, CNTC established a National Tobacco Research Center (NTRC) within Henan University.³⁰ Under the direct administration of CNTC, NTRC is a research and education-oriented institute with the goals of promoting the use of technology in tobacco farming, manufacturing and research and training tobacco researchers.³¹ Both QTRI and NTRC have become major tobacco research centres at the national level along with ZTRI.

In 2004, Changde Cigarette Factory, a CNTC subsidiary located in Changde, Hunan Province, established a 'Tobacco Engineering & Technology Research & Development Center and a programme for Masters, PhDs and postdoctoral fellows with Hunan Agricultural University.³² In 2007, CNTC established its China Tobacco Central-southern Agricultural Test Center in Hunan Agricultural University.³³ The Center is directly affiliated with CNTC.

According to the Ministry of Education Regulations, only universities and government-affiliated research institutions can issue Bachelor's, Master's and PhD degrees. Because CNTC is part of the central government and ZTRI is affiliated with CNTC, ZTRI has its own Masters programmes on tobacco chemistry, cigarette manufacturing and tobacco farming.³³ ZTRI also has a joint PhD programme with the Chinese Academy of Sciences focused on tobacco chemistry³⁴ and another joint PhD programme with Dongnan University on cigarette manufacturing.³⁵

In 1999, Hefei Economic and Technological Institute, a research institute established by CNTC in 1989 and under the direction of CNTC since its founding,³⁶ was merged into the University of Science and Technology of China (USTC),³⁷ one of China's most prestigious universities, and a Tobacco and Health Research Center established in USTC.³⁸ The director of the Tobacco and Health Research Center is a member of CNTCs' Science and Technology Committee, which is responsible for scientific evaluation, including grant evaluation, within CNTC. Beginning in 2003, CNTC and USTC established a tele-continuing education tobacco programme that conferred Bachelor of Science degrees in tobacco farming and cigarette manufacturing to CNTC employees.³⁹ In 2007, CNTC expanded its collaboration with USTC by establishing a joint Masters of Business Administration programme and a mechanical engineering Masters programme for CNTC employees.⁴⁰

CNTC and its local corporations have also established training centres for the continuing education of their employees (table 1). The training centres listed in table 1 include all of the training centres affiliated with CNTC. While training is the primary focus, researchers from these training centres participate in every aspect of tobacco research, including research related to the health effects of tobacco use, either by themselves or in collaboration with tobacco company researchers. Five of the training centres were also established within Zhuanke schools (part of the higher education system as universities, except one level lower).

The Chinese tobacco industry has also reached out to sponsoring the education of school-aged children. According to a 2010 report by the Tobacco Control Office at China CDC,⁴¹ more than 100 elementary schools across China are sponsored by the tobacco companies with the names of the tobacco companies as school names. And according to a spokesperson for the tobacco industry in China, tobacco firms sponsoring schools is about 'contributing to social welfare'.⁴²

Research productivity and focus

The number of papers published in every area of tobacco research increased dramatically over the past 25 years since the founding of CNTC (figure 2). Tobacco farming and cigarette manufacturing dominated this work by CNTC, but fell from 79% of all the research papers in 1983–1987 to 69% in 2003–2007 (figure 2). Quality assessment and quality control of tobacco leaf and cigarettes and tobacco company management grew over this time, from 3% to 11% and from 4% to 11% of the research effort (figure 2), reflecting that CNTC has allocated more resources into developing a more sophisticated product and improving the efficiency of the industry through more research on corporate management.

Health-related research was not a major focus of the Chinese tobacco industry, however, research on less harmful and low-tar cigarettes (and other health effects) grew from 1% in 1983–1987 to 4% in 2003–2007 (figure 2). This pattern suggests that CNTC is transitioning from a traditional company focused on increasing productivity through farming and cigarette production to a more modern company focused on product development and management refinement. During the 2010 National Tobacco Working Meeting⁴³ Jiang Chengkang, the director of CNTC, reported that developing less harmful and low-tar cigarettes had been set as one of CNTC's major objectives. The report also set the goal of lowering the maximum level of tar to below 12 mg/cig by January 1, 2011 and 10 mg/cig by January 1, 2015. The report also stated that 'for major cigarette brands in China, developing less harmful and low-tar cigarettes is not only needed for development, but for survival'.⁴³

Collaborations between CNTC and academic institutions in published research papers

Academic institutions are heavily involved in tobacco companies' research. 36% of all the papers published by tobacco company researchers or sponsored by tobacco companies involve academic researchers. The percentage has also increased steadily from 6% in 1983–1987 to 48% in 2002–2007 (figure 3). In the 25 years between the founding of CNTC and 2007, CNTC collaborated with or sponsored tobacco research in 322 universities and 158 public research institutes, as evidenced by the joint authorship or declared tobacco company sponsorship. Of these, 139 universities and 67 public research institutions conducted tobacco research with declared tobacco company sponsorship. The rest collaborated with the tobacco companies through joint authorship.

The extent of collaboration with CNTC varies considerably among academic institutions. The 10 academic institutions with the most collaboration (table 1) account for 47% of all the

co-authored research papers, while three fourths of the academic institutions have published fewer than five research papers co-authored with the tobacco companies.

Academic institutions are most actively involved in three segments of tobacco research—tobacco farming, quality assessment of tobacco leaf and cigarettes, and less harm and low-tar cigarettes (figure 4). Around 60% of the papers published in these three areas between 2003 and 2007 by the tobacco companies have involved academic researchers. For all the six areas of tobacco research published or sponsored by tobacco companies, academic involvement increased steadily over time.

DISCUSSION

CNTC has established and maintains an extensive network of tobacco research institutions owned by the industry. Exploiting its official role as a central government agency, CNTC also extensively collaborates with academic researchers throughout China to set up centres to train its employees and research centres to advance its research agenda. CNTC's relationship with academic institutions in China is also reflected in the widespread collaboration between CNTC and academic researchers and the prevalence of funding to academic researchers. There is a clear trend of tobacco industry's increasing reliance on academic researchers in every aspect of tobacco research other than in the research of health harms of tobacco. We found little evidence that suggested the Chinese tobacco industry have been involved or sponsored research on the health harms of tobacco smoking.

The research published by the Chinese tobacco companies, with or without the involvement of academia, heavily focuses on tobacco farming and cigarette engineering with little attention paid to the health consequences of smoking and passive smoking. Nevertheless, a specific area of research interest of CNTC that is growing is the development of harm reduction techniques. Hundreds of research papers have been published on low-tar and herbal cigarettes,⁴⁴⁻⁴⁶ both of which have been claimed by CNTC to be less harmful products. The tobacco industry also used prominent academic figures as spokespersons for the industry and to justify the 'less harmful, low-tar' strategy.⁴⁷ In contrast, independent research showed that low-tar and herbal cigarettes in China do not deliver lower doses of nicotine or carcinogens.^{48,49}

In light of the globalisation of the tobacco market and the increase in communication between CNTC and the transnationals,⁵⁰⁻⁵² CNTC may learn from the multinationals the sophisticated promotion strategies, including conducting research and sponsoring academic research to confuse the public about the health consequences of smoking and passive smoking.¹³¹⁴ Existing evidence, while limited, suggests that the Chinese tobacco industry behaviour in some areas is similar to what the transnational tobacco companies have been doing in the west, from the promotion of cigarettes using popular athletes⁵³ to unjustified claims that low-tar and herbal cigarettes were less harmful products.^{48,49} In September 2009, a Chinese tobacco industry official openly questioned the science behind passive smoking during a public hearing on smoke-free legislation in Shanghai.⁵⁴

LIMITATIONS

Although more and more scientific journals in China require the declaration of funding sources for publication, many still do not have such requirement. This situation could lead to underestimation of the extent of tobacco company sponsorship in this study. In addition, the collaboration between the tobacco industry and academic researchers is not restricted to scientific publications, which is what we examined in this paper. For instance, CNTC hired a group of researchers from Renmin University, a prominent social sciences university, to

conduct research on the strategic planning for the industry and publish their findings in a book.⁵⁵

In contrast to the United States, England and some other countries for which there are extensive internal documents from the transnational tobacco companies available as a result of litigation in the United States (and accessible through the UCSF Legacy Tobacco Documents Library), few such CNTC internal documents are available. This has limited the depth of our understanding of the ties between the Chinese tobacco industry and academic researchers. For instance, our analysis included 100 publications of Professor Zhou Jiheng from Hunan Agricultural University; 60% of these publications disclose funded by the tobacco industry. An active lobbyist for the tobacco industry, Professor Zhou has signed many research contracts with CNTC. However, because of the lack of access to such confidential information, our understanding of the true nature of these ties is limited.

Implications of China's ratification of the framework convention on tobacco control

The fact that CNTC is a government agency legitimises tobacco sponsorship among academic researchers. Several academic institutions openly take pride in the great number of research projects sponsored by CNTC and the fact that they contribute to the companies' research and development agenda. Also, as mentioned above, CNTC maintains administrative authority over the tobacco research centres in several universities. Article 5.3 of the Framework Convention on Tobacco Control, which China ratified in 2005, clearly states that setting tobacco control policies shall be protected from the interests of the tobacco industry. Since scientific findings by academic researchers are a critical basis for tobacco control policies, receiving tobacco sponsorship and allowing the tobacco industry involvement in the administration of tobacco research centres in universities can subject academic research to industry influence.

While there is no direct evidence of the kind of systematic manipulation of the scientific process to protect CNTC's interest that has been common among the multinational tobacco companies, linkages with the multinationals is increasing and the multinationals have reached out to CNTC to involve it in their global efforts to use manipulation of science to defend their interests. To the extent that CNTC's involvement with academic institutions provides an avenue for influencing tobacco control policymaking, these connections violate the Article 5.3 of FCTC, which China ratified in 2005. The sponsorship of elementary schools by CNTC is a clear violation of the FCTC Articles 5.3 and 13. Such behaviour of CNTC likely promotes tobacco use, normalises the tobacco industry and its involvement in education.^{56,57} Chinese academic institutions should also consider the fact that engagement with the tobacco industry, particularly on issues related to health or the promotion of tobacco products, could damage their reputation, a concern that has led many leading Western universities to eschew relationships with the tobacco industry.

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Figure 1.

Hierarchy of CNTC's research capacities and relationship with academic institutions. Tobacco company owned research institutions are in bold and academic institutions are in *italic*. CNTC, China National Tobacco Corporation; STMA, State Tobacco Monopoly Agency; TMBs, Tobacco Monopoly Bureaus; CTA, China Tobacco Association; TAs, tobacco associations; CNTC TC, China National Tobacco Corporation Training Center (located in Zhengzhou); TCs, training centres; TRIs, tobacco research institutes; ZTRI, Zhengzhou Tobacco Research Institute; QTRI, Qingzhou Tobacco Research Institute.

Figure 2. (Left) The number of research papers published by tobacco companies or sponsored by tobacco companies in six areas of tobacco research between 1983 and 2007. (Right) Mix of topics of research papers published or sponsored by tobacco companies in six areas of tobacco research between 1983 and 2007.

Figure 3. Percentages of academic involvement in papers published or funded by tobacco companies over the years as reflected in joint authorship in journal publications. (The denominator for the percentages is the number of papers published or funded by the Chinese tobacco companies.)

Figure 4.

The increasing involvement of academic researchers in tobacco companies' research over the years in different segments of tobacco research, as reflected in the percentage of joint-authorship of published research papers out of all papers published or sponsored by tobacco companies.

Table 1

Some of CNTC's affiliated research and training institutions^{a,b}

Relationship with tobacco companies	
Name of institution	
Tobacco company directly affiliated research institutions	
Zhengzhou TRI ^c	The only TRI owned by CNTC at the national level.
Hubei TRI ^d	Provincial level TRI, affiliated with Hubei TMB. China Burley Tobacco Research Center (directly affiliated with CNTC) is housed in Hubei TRI.
Shaanxi TRI ^e	Provincial level TRI, affiliated with Shaanxi TMB.
Jiangxi TRI ^f	Provincial level TRI, affiliated with Jiangxi TMB.
Yunnan TRI ^g	Provincial level TRI, affiliated with Yunnan TMB. China Burley Tobacco Research (Southern) Center (directly affiliated with CNTC) is housed within Yunnan TRI.
Guizhou TRI ^h	Provincial level TRI, affiliated with Guizhou TMB. China Tobacco Southwest Agricultural Test Center (directly affiliated with CNTC) is housed in Guizhou TRI.
Heilongjiang TRI ⁱ	Provincial level TRI, affiliated with Heilongjiang TMB.
Samming TRI ^j	City level TRI, affiliated with Samming TMB, Fujian Province.
Shaotong TRI ^k	City level TRI, affiliated with Shaotong TMB, Yunnan Province.
Nanxiong TRI ^l	City level TRI, affiliated with Nanxiong TMB, Guangdong Province.
Qujing TRI ^m	City level TRI, affiliated with Qujing TMB, Yunnan Province.
Chuxiong TRI ⁿ	City level TRI, affiliated with Chuxiong TMB, Yunnan Province.
Tongren TRI ^o	City level TRI, affiliated with Tongren TMB, Guizhou Province.
Tobacco company training centres	
Zhengzhou Tobacco School ^p	National level training centre, also a Zhongzhuan, affiliated with CNTC, located in Zhengzhou, Henan Province.
Yunnan Tobacco School ^q	Provincial level training centre, affiliated with Yunnan TMB.
Shandong Tobacco School ^r	Provincial level training centre, also a Zhongzhuan, affiliated with Shandong TMB. In collaboration with Shandong University and Shandong Agricultural University in tobacco training.
Heilongjiang Tobacco School ^s	Provincial level training centre, also a Zhongzhuan, affiliated with Heilongjiang TMB.
Xiangtan Tobacco School ^t	Provincial level training centre, also a Zhongzhuan, affiliated with Hunan TMB.
Anhui Tobacco Training Center ^u	Provincial level training centre, affiliated with Anhui TMB.
Jilin Tobacco Training Center ^v	Provincial level training centre, affiliated with Jilin TMB. Jointly set up by Jilin TMB and Changchun Tax School.

Relationship with tobacco companies	
Name of institution	
Tobacco associations	Fujian Tobacco Training Center ^{yv} Provincial level training centre, affiliated with Fujian TMB.
	Neimenggu Tobacco Training Center ^x Provincial level training centre, affiliated with Neimenggu TMB.
	Jiangxi Tobacco Training Center ^y Provincial level training centre, affiliated with Jiangxi TMB.
	China Tobacco Association ^z Affiliated with CNTC.
Academic research institutions	Local Tobacco Associations Affiliated with CNTC branch agencies at the corresponding level of the tobacco association (provincial, city and town).
	Qingzhou Tobacco Research Institute ^{a1} A branch institute of China Academy of Agricultural Sciences, under the joint direction of CNTC. Among the top 10 academic institutions with most tobacco publications.
	Anhui Institute of Tobacco Research ^{a2} Provincial level TRI affiliated with Anhui Academy of Agricultural Sciences, strong ties with Anhui Tobacco Monopoly Bureau.
	Henan Institute of Tobacco Research ^{a3} Provincial level TRI, affiliated with Henan Academy of Agricultural Sciences, under strong influence from Henan Tobacco Monopoly Bureau. Among the top 10 academic institutions with most tobacco publications.
	Yunnan Agricultural Institute ^{a4} Among the top 10 academic institutions with most tobacco publications.
	Ganzhou TRI ^{a5} City level TRI, affiliated with Ganzhou Agricultural Sciences Research Institute, under the supervision of Ganzhou TMB, Jiangxi Province.
	Henan Agricultural University ^{a6} CNTC established the National Tobacco Research Center (NTRC) in Henan Agricultural University. NTRC is directly affiliated with CNTC. Among the top 10 academic institutions with most tobacco publications.
	Hunan Agricultural University ^{a10} China Tobacco Central-southern Agricultural Test Center, established by Hunan TMB and Hunan Agricultural University, is situated in Hunan Agricultural University. Among the top 10 academic institutions with most tobacco publications.
	University of Science and Technology of China Tobacco and Health Research Center ^{a8} closely tied to CNTC, Joint education programmes with CNTC. ^{a9} Among the top 10 academic institutions with most tobacco publications.
	Chinese Academy of Sciences ^{a8} Joint PhD programme with CNTC. Among the top 10 academic institutions with most tobacco publications.
Universities	Dongnan University ^{a9} Joint PhD programme with CNTC.
	Yunnan University ^{a10} Among the top 10 academic institutions with most tobacco publications.
	Shandong Agricultural University ^{a11} Among the top 10 academic institutions with most tobacco publications.
	Yunnan Agricultural University ^{a12} Among the top 10 academic institutions with most tobacco publications.

- ^aTRI, Tobacco Research Institute; TMB, Tobacco Monopoly Bureau.
- ^bThe list is not comprehensive and only includes those institutions that have websites.
- ^c<http://www.ztri.com.cn/> (accessed 27 Sep 2010).
- ^d<http://www.blysyzy.cn/intro.asp> (accessed 27 Sep 2010).
- ^e<http://www.snyy.com.cn/syggk/zjzg/18ae888a72258f200122591890a1002e.htm> (accessed 27 Sep 2010).
- ^f<http://www.21sjzg.com/zgjc/jxyjcj.htm> (accessed 27 Sep 2010).
- ^g<http://www.cyats.com/> (accessed 27 Sep 2010).
- ^h<http://www.tryc.com.cn/shownews.asp?newsid=15> (accessed 27 Sep 2010).
- ⁱ<http://www.hljyczb.com/index.html> (accessed 27 Sep 2010).
- ^j<http://new.fjycw.com/AboutUs/about.aspx> (accessed 27 Sep 2010).
- ^k<http://www.yntsti.com/institution/view.asp?id=16> (accessed 6 Sep 2010).
- ^l<http://www.21sjzg.com/cncic/sgxm/sg/122/index1.htm> (accessed 27 Sep 2010).
- ^m<http://www.yntsti.com/institution/view.asp?id=25> (accessed 6 Sep 2010).
- ⁿ<http://www.yntsti.com/institution/view.asp?id=1> (accessed 6 Sep 2010).
- ^o<http://www.tryc.com.cn/shownews.asp?newsid=15> (accessed 27 Sep 2010).
- ^p<http://www.ctt.cn/elms/newportal/index-8.jsp?parentType=2000> (accessed 27 Sep 2010).
- ^q<http://www.ctt.cn/elms/portal/more.jsp?parentType=10&type=10&company=yn> (accessed 27 Sep 2010).
- ^r<http://www.ctt.cn/elms/portal/more.jsp?parentType=10&type=10&company=sd> (accessed 27 Sep 2010).
- ^s<http://www.ctt.cn/elms/portal/more.jsp?parentType=10&type=10&company=hlj> (accessed 27 Sep 2010).
- ^t<http://www.xtyx.com> (accessed 27 Sep 2010).
- ^u<http://www.ctt.cn/elms/portal/more.jsp?parentType=10&type=10&company=ah> (accessed 27 Sep 2010).
- ^v<http://www.ctt.cn/elms/portal/more.jsp?parentType=10&type=10&company=jl> (accessed 27 Sep 2010).
- ^w<http://www.ctt.cn/elms/portal/more.jsp?parentType=10&type=10&company=fj> (accessed 27 Sep 2010).
- ^x<http://www.ctt.cn/elms/portal/more.jsp?parentType=10&type=10&company=nmg> (accessed 27 Sep 2010).
- ^y<http://www.ctt.cn/elms/portal/more.jsp?parentType=10&type=10&company=jx> (accessed 27 Sep 2010).

- ^{a1}http://www.tobacco.org.cn/gywm_xhjj.jsp (accessed 27 Sep 2010).
- ^{a2}<http://www.tric.cn/> (accessed 27 Sep 2010).
- ^{a3}http://www.ati.org.cn/showjgsz.asp?art_id=2&cat_id=16 (accessed 27 Sep 2010).
- ^{a4}<http://baike.baidu.com/view/1477252.html?fromTaglist> (accessed 27 Sep 2010).
- ^{a5}<http://www.yaas.org.cn> (accessed 27 Sep 2010).
- ^{a6}<http://ganzhou.dg3g.com/zh-CN/Trade/Company/Profile/8948.msp> (accessed 27 Sep 2010).
- ^{a7}<http://baike.baidu.com/view/299689.html> (accessed 27 Sep 2010).
- ^{a8}http://hnndxb.cuepa.cn/show_more.php?doc_id=19930 (accessed 27 Sep 2010).
- ^{a9}<http://www.tbaccocollege.com/tcads/tccenter.htm> (accessed 27 Sep 2010).
- ^{a10}http://www.tobacco.gov.cn/html/21/2101/67728_n.html (accessed 27 Sep 2010).
- ^{a11}<http://www.gsc.dicp.ac.cn/zsxx/lhpybsgg.htm> (accessed 27 Sep 2010).
- ^{a12}http://kaoyan.eol.cn/yuan_xiao_xin_xi_3988/20061212/20061212_209166.shtml (accessed 27 Sep 2010).
- ^{a13}<http://www.ynu.edu.cn> (accessed 27 Sep 2010).
- ^{a14}<http://www.sdau.edu.cn> (accessed 27 Sep 2010).
- ^{a15}<http://www.ynau.edu.cn> (accessed 27 Sep 2010).