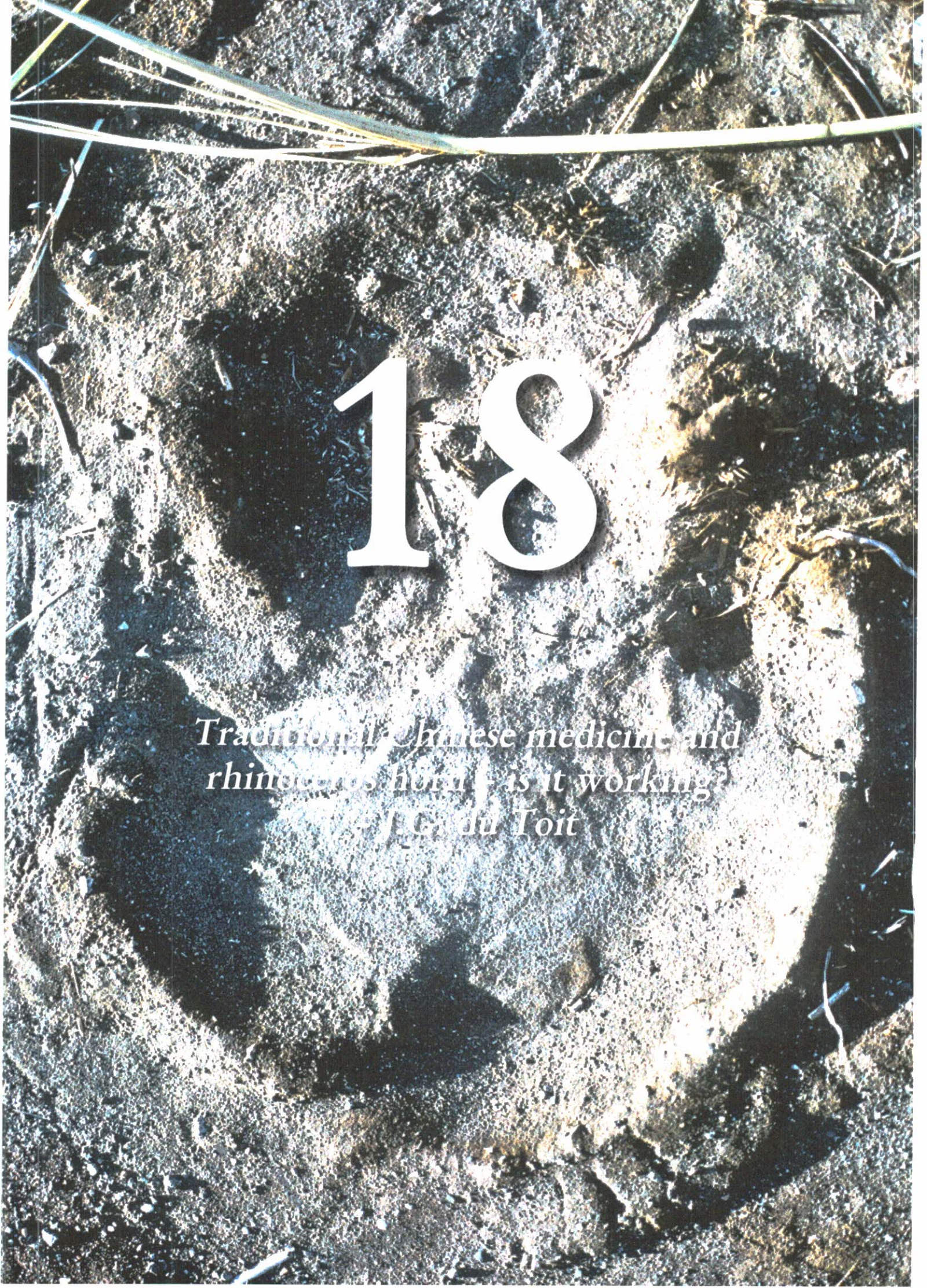

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Traditional Chinese medicine and rhinoceros horn: is it working?

J G du Toit

CHAPTER 18

Traditional Chinese medicine and rhinoceros horn – is it working? – J.G. du Toit

As early as about 475–221 B.C., the treatment of infectious diseases was described in Plain Questions from The Yellow Emperor's Canon of Internal Medicine, the earliest Chinese medical classic. In the past thousands of years, traditional Chinese medicine accumulated rich experiences in treating infectious diseases, which were recorded in a great number of medicinal books (Pei, undated).

Rhinoceros horn was never used as an aphrodisiac. This is a sensational statement that was hijacked by the media. Its two main uses are ornamental and medicinal. In the Middle East, rhinoceros horn is used for making ceremonial dagger handles (janbiyyas) and in the Far East it is used as ceremonial cups and bowls. In the Far East it is also used as traditional Chinese medicines, *"zhong yi"*, (TCM). Both these uses have a long historical precedent and are ingrained in the respective cultures. In India, people from the Gujarati community once believed that rhinoceros horn acted as an aphrodisiac, but this is not relevant to the rhinoceros's current predicament.

Is rhinoceros horn really effective as a medicine? In 1988 Professor Paul But of the Department of Ethnopharmacology of the University of Hong Kong conducted research on the effects of rhinoceros horn. His findings were a mild anti-pyretic (fever reducing) effect in rats when administered at high dosages. Whether rhinoceros horn really works as an anti-inflammatory to reduce fever is of little relevance. What matters is that the Chinese consumers believe that it works. Chinese doctors, pharmacists and patients are unlikely to change their culture simply because some Westerners think they are wrong. Will Westerners stop using Aspirin because someone from the East thinks it does not work?

Firstly, medicines are prescribed by doctors and pharmacists, and the customer does not know what the ingredients contain. These medicines consist of a mixture of eight ingredients. These mixtures are the intellectual property of the doctor or pharmacist and therefore the Western world will never understand the use of rhinoceros horn; it is a top secret. The difference between Western and traditional Chinese medicine is as follows; Chinese traditional medicine is a holistic approach and these mixtures cannot be patented. On the other hand, Western medicine is usually a single molecule and can be patented. Secondly, any feelings of compassion for animals are forgotten when the life of a family member is threatened by a serious fever.

On World Rhinoceros Day on 22nd September 2011 the message from Australia to Zimbabwe was loud and clear. Rhinoceros horn is not a medicine! Where does the information substantiating the statement come from? Two studies were done for the World Wildlife Fund. The first was done by the pharmaceutical company Hoffmann-La Roche who tested

white rhinoceros horn in 1980. The tests showed that rhinoceros horn, which, like fingernails is made of agglutinated hair, has no analgesic, anti-inflammatory, anti-spasmolytic or diuretic properties. It cannot be verified whether peer reviews were done on this study. There appears to be no supporting scientific ev idence given for the claim that rhinoceros horn is *"medically the same as chewing your fingernails"* but it is a nice sound bite. The claims that rhinoceros horn has no medicinal qualities seem to be based on rather flimsy evidence but that does not mean to say they are wrong. The question then is, are there any scientific results that might suggest that rhinoceros horn has some medicinal value? (Patton, 2011).

Traditional Chinese medicine is a well-researched science with several specialist study field in universities and medical schools. The book – Traditional Chinese medicines: Molecular structures, natural sources and applications. 2nd Ed. Zhou, J., Xie, G. & Yan, X. Published by Ashgate Publishing Ltd, UK & USA in 2003 – gives details of the chemical compounds that have been found to be responsible for the medicinal value in each traditional Chinese medicine ingredient. The second edition of the book contains information on 9127 chemicals isolated from 3922 natural sources. The Chemical Compound associated with rhinoceros horn is given as: 2897 Ethanolamine: Synonyms: 2-Amino-ethanol; Mono-ethanolamine CAS Registry Number <141-43-5> C_2H_7NO. Traditional Chinese medicine Source XI JIAO (Chinese name for rhinoceros horn).

Chemically, rhinoceros horn contains keratin, amino acids, guanidine derivatives, sterols, amine (ethanolamine), acidic peptide and sugar- and phosphorus-containing substances. Rhinoceros horn also contains many trace and metallic elements, including a high amount of calcium. **Refer to Table 18.1 below.**

Other studies show that the claims of Chinese herbalists that rhinoceros and other horns could indeed lower feverish temperatures could be true. Buffalo horn could be a viable substitute for rhinoceros horn, and horn and herb combinations were more efficacious than horn alone. All horns demonstrated antipyretic action at very high dosages (over 100 times the normal human dosage of rhinoceros horn). The effects of rhinoceros and saiga antelope horns were apparently similar, yet in practice rhinoceros horn is regarded as superior in cooling blood and counteracting toxins, while saiga horn is favoured for cooling liver and quenching wind. At low dosage levels, the individual extracts of neither horn nor herbs could induce a drop in rectal temperature in rats with hyperthermia, while the combined horn-herbs extracts of either rhinoceros or water buffalo horns demonstrated significant antipyretic actions. This clearly indicates that water buffalo horn can be used as a substitute for rhinoceros horn when prescribed in combination with other herbal materials (Patton, 2011).

The most recently published study by Liu *et. al.* (2001) of the medicinal efficacy of rhinoceros horn is an analysis of the active components of rhinoceros, water buffalo and yak horns using two dimensional electrophoresis and ethnopharmacological evaluation. The study noted that, in order to reduce the dependence on rhinoceros horn in Chinese medicine, researchers have started looking for other horns that could substitute it.

The overwhelming increase in demand for rhinoceros horn derives from a non-traditional and unproven use as a cure for cancer. Rhinoceros horn as medicine to cure cancer has never

been claimed by traditional Chinese medicine practitioners. This was based on a rumour that came from Vietnam. However, this claim was never investigated by scientists.

Table 18.1: Composition of rhinoceros horn (Patton, 2011)

Chemical	Human Hair	Fingernails	Rhino Horn	Note re rhino horn
Nitrogen	15.4	14.9	15.6	
Sulphur	5.0	3.8	2.3	
Histidine	0.6	0.5	0.6	
Lysine	2.5	2.6	2.6	
Argenine	8.0	8.5	8.2	
Cystine	15.5	12.0	8.7	Relatively low
Tyrosine	3.0	3.0	8.6	Very high
Tryptophane	0.7	1.1	1.7	
Phenylalanine	2.6	2.5	5.0	Relatively high
Glycine	4.3	-	7.4	

Sampling of rhinoceros horn for laboratory analysis

When people criticise Chinese people for using traditional medicines, they should do so according to laboratory research, rather than without foundation. Although they use plants or wild animals, not drugs, they are treating diseases and protecting people's health, just like in western medicine. However, Chinese people must respect wildlife and obtain raw material in a legal way.

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