

Rhinoceros Horn Risk to Humans

Presented by Wild & Free South Africa
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History of Rhino Horn Consumption

- For millennia rhino horn has been used **mainly** as a Traditional Medicine in Asia.
- Its intrinsic “value” is bound up in a perceived ability to relieve “heat” as it is understood in TCM.
- Whether it is traded as ‘medicine’ or ‘jewelry’ - ultimately the “value” of rhino horn is determined by its perceived healing powers.
- This has led to it being considered as a form of currency / investment commodity by collectors. The belief that it is worth keeping in the medicine chest drives the price up to 20x that of ivory.

Demand reduction strategies

Black rhinoceros populations declined by over 97 % during the period 1960 to 1992. This trend only reversed after a total CITES ban on trade in SE Asia, and finally Yemen in 1997. Rhino populations grew rapidly, until a cancer cure rumour in Viet Nam caused increased demand.

At that time all rhinoceros species were afforded the highest level of protection and given Appendix I status, prohibiting commercial trade. Demand reduction strategies agreed upon at CITES are being developed by associated organisations such as TRAFFIC and WWF. Wild Aid, Nia's Friends, HSI and many other are currently launching mass campaigns aimed at reducing demand.

These face an uphill battle - NOT because the relatively small remaining group of Vietnamese being difficult to reach, but from here - in SA. Demand reduction messages are negated by messages of value sent by a group of people in South Africa. Clearly this has to end.

It is essential that demand reduction strategies be fully supported if the species is to be conserved, or (let us hope) preserved.

Devaluing rhino horn as an anti-poaching tool

1. Horn infusion

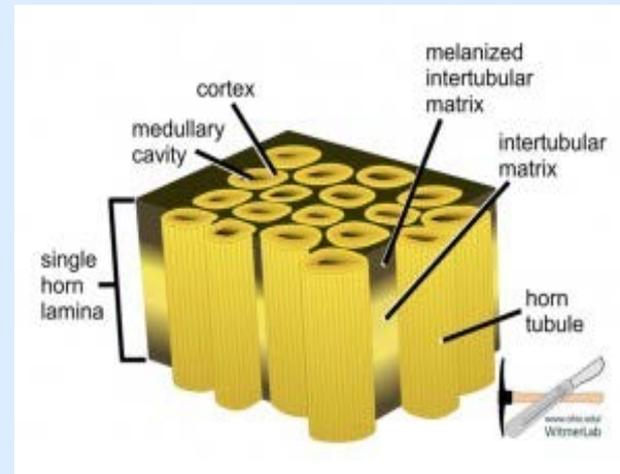
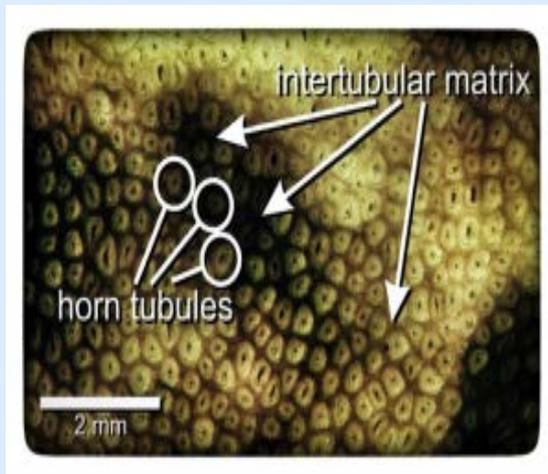
Wild and Free SA supports nausea-inducing ektoparaciticide infusion as a strategy to devalue horn
<http://rhinorecueproject.org/>

2. Medical Risk to Humans

Our research into the composition of rhino horn shows evidence of medical risk to humans that warrants safety tests before any form of trade in rhino horn can be considered. It is common cause that the substance is ingested by humans. Promoting a prima facie unsafe medicine presents risk to both users and suppliers.

Part of rhino horn used in TCM

- Because of strong disulfide bonding, only certain keratins can be made bio-available. Dissociating or reducing agents, and very high mechanical stress can break non-melanised keratin bonds to make available the amino acids, which has a small effect on fever.
- The keratin bonds of the melanised intertubular matrix is extremely difficult to break, and is therefore useless as TCM
- The parts of the intertubular matrix free of melanin can be broken using a ceramic grinding plate with very fine grit
- This means that the most sought after part of the rhino horn is the base. This partly explains why dehorned rhino are still poached for the nub.



Scientific analysis of rhino horn

- Rhino horn is similar, but not identical, in chemical composition to water buffalo, cattle and yak horns, which are frequently used to substitute for rhino horn in traditional medicinal formulas.
- Keratin is not normally bioavailable, and is mostly chemically inert. To make even a small amount of amino acids bio-available from keratin, it has to be ground using a very fine grit able to break the keratin bonds and make some amino acids available. Traditionally, rhino horn is sold with a ceramic grinding dish with grit of 1800+
- The difference most relevant to this discussion is the ratio of amino acids in rhinoceros horn compared to TCM herbal remedies and other alternatives. The next page shows the ratios of the amino acids in horn from three species

Studies on the Compositions of Hard Tissue Proteins Extracted from Bovine Horn , Water Buffalo Horn and Rhinoceros Horn

- Seung Ki Lee and Young Eun Kim, 1974

Korean Biochemical Journal 7 (2): 125-142

Tryptophane	0.65	0.75	0.65
Lysine	2.67	5.57	4.99
Histidine	0.86	1.12	1.21
Arginine	11.02	10.61	11.61
Aspartic acid	10.09	10.73	9.89
Threonine	3.98	3.97	3.90
Serine	4.50	5.16	4.48
Glutamic acid	18.62	19.36	18.24
Proline	3.74	2.87	3.16
Glycine	3.79	4.86	3.90
Alanine	4.50	4.44	5.27
Cystine	0.55	—	0.72
Valine	5.56	5.73	5.95
Methionine	0.68	1.26	0.90
Isoleucine	4.12	4.64	4.50
Leucine	10.23	10.96	11.23
Tyrosine	5.42	4.86	5.43
Phenylalanine	2.92	3.29	3.60
Carboxymethyl Cysteine	9.41	6.06	5.96

Phenylalanine ratio

Rhino horn contains a high percentage of the amino acid Phenylalanine. This makes it extremely dangerous for people with PKU (Phenylketonuria), and such warnings are printed on all substances that contains PHE.

PKU patients lack [phenylalanine hydroxylase \(PAH\)](#) enzyme activity. Ingestion of Phe causes [intellectual disability](#), [seizures](#), and other serious medical problems, including autism.

Phenylalanine has been tested to impair cognitive ability in several tests.

Taking the above findings into consideration, it is clear that it is incumbent upon this committee conduct a proper, double-blind, placebo-controlled medical trial on the long term safety of rhino horn so that South Africa does not find itself in a legal bind.

Phenylalanine toxicity

Empirical data

- BRAIN SEROTONIN CHANGES IN PHENYLALANINE FED RATS: SYNTHESIS STORAGE AND DEGRADATION: A. YUWILER and E. GELLER Neurobiochemistry Laboratory, Veterans Administration Center, and Department of Psychiatry, UCLA School of Medicine, Los Angeles, California (1968) Abstract-The brain serotonin levels of rats maintained on a 5 % phenylalanine diet rose more slowly (0.18 $\mu\text{g/g}$ brain/hr) after administration of a monoamine oxidase inhibitor than did serotonin levels of controls (0.41 $\mu\text{g/g}$ brain/hr). It was concluded that the decrease in brain serotonin levels in phenylalanine-fed animals was due to decreased serotonin formation.
- Phenylketonuria in Hong Kong Chinese: a call for hyperphenylalaninemia newborn screening in the Special Administrative Region, China. (Mak CM, Ko CH, Lam CW, Lau WL, Siu WK, Chen SP, Law CY, Lai CK, Yu CM, Chan AY.) Abstract: Hyperphenylalaninemia is one of the commonest inborn errors of metabolism affecting approximately 1 in 15,000 livebirths. **Among Chinese, BH4 deficiency leading to hyperphenylalaninemia is much commoner than in Caucasians.**
- <http://www.ncbi.nlm.nih.gov/pubmed/20358271>
Prenatal and perinatal risk factors for autism in China.
"It has been postulated that semi-digested peptide chains form morphine which interferes with nerve transmission to the brain."

“Aspects of autism: A review of causes” (2011)

Bai Xiguo, Beijing Medical University

Does Rhinoceros horn cause autism?

In the article in the *Journal of Toxicology*, "Aspects of autism: A review of causes", the author Bai Xiguo, Beijing Medical University, reviewed the entire body of published science since autism was first described in 1943.

Xiguo's article states, in part, that "Documented causes of autism include viral infections and/or genetic mutations following therapies of *Cornu Rhinoceri Asiatici*. Thyroid function, serum long-chain fatty acids, and cerebrospinal-fluid lactate were measured to exclude known causes of neurodegenerative disease."

The article goes on to discuss many potential culprits related to rhinoceros horns. "What I have published is highly concentrated on hypersensitivity, Xiguo told us in an interview, "the body's immune system being thrown out of balance. Biochemical, haematological, and immunological profiles were examined."

Since many government officials and scientists have implied that theories linking rhinoceros horns to autism have been disproven, Bai Xiguo states that research shows otherwise.

Medical trials

- In 1992, the Chinese University in Hong Kong conducted a study on rats that established that finely ground rhino horn can reduce fever - but less so than water buffalo horn and substantially less so than aspirin, paracetamol or other cheap analgesics. This resulted in a TOTAL ban on horn in China.
- Tsai, F.J. (1995). Antipyretic Effect of Xi Jiao [Rhino horn] and Shuiniujiao [Water buffalo horn] in Children. Annual Report of Chinese Medicine and Pharmacy 329-337. Taipei, Taiwan
This resulted in a TOTAL ban on horn in Taiwan.
- Because ample anecdotal evidence indicates that horn is unsafe for consumption, implicated Parties will be well advised to conduct a long term study before legalising the substance.

Vietnamese reaction

In December 2014 the Vietnamese NPO "WildAct" organised a seminar with doctors, nurse and hospital staff at Hanoi Obstetrics and gynecology (HOGH), with support from Ho Chi Minh Communist Youth Union and materials supported by TRAFFIC Greater Mekong.

Currently, posters with clear advice from Vietnamese doctors have been placed at every reception table, waiting lounge and hallway at this hospital.

The poster reads: "Rhino horn is not medicine. Disease, even serious illness such as cancer if treated at early stage and using correct treatment can be cured 100%. Don't lose your time for rumor and miss out the chance of getting effective treatment. Do you know: To protect the rhino from rhino horns consumer, conservationists infused rhino horn with organophosphates, ectoparasiticides and even radioactive tracer. Consumers of rhino horn might have several symptoms, such as severe nausea, vomiting, convulsions. It can also affect nervous system and increasing several type of cancer. If you are suffering from health problems, visit your doctor and follow their advices! Don't waste your time and money for rumor."



Sừng tê giác không phải là thuốc!

Những căn bệnh nặng kể cả bệnh ung thư nếu được phát hiện sớm, điều trị kịp thời và đúng phương pháp, tỷ lệ khỏi bệnh có thể đạt tới 100%. Đừng để lỡ thời cơ **chữa bệnh sớm** vừa đơn giản vừa hiệu quả.

Bạn có biết: Để ngăn việc sử dụng sừng tê giác, các nhà bảo vệ động vật đã **tiêm chất độc**, thậm chí là cho nhiễm phóng xạ vào sừng tê giác. Phương pháp này không gây hại cho tê giác nhưng **độc hại cho người sử dụng**. Người sử dụng sừng tê giác ngấm chất độc có thể gặp các triệu chứng như **buồn nôn, tiêu chảy, tê liệt thần kinh, thậm chí tử vong**.

Khi có bệnh, hãy đến khám và nghe theo chỉ dẫn của các bác sĩ và chuyên gia y tế!

Đừng tin những lời đồn đại vô căn cứ, dẫn đến tiến mất tật mang!

Risk of lawsuits - GRAP 19

Treasury, in accordance with GRAP 19: "Provisions, contingent liabilities and contingent assets" requires:

That a Government Entity obtain opinion from its legal advisers whether:

- 1) It is merely possible that a claim may be successful, but not probable - CONTINGENT LIABILITY - the existence of an obligation will only be confirmed by the occurrence or non-occurrence of uncertain future events (outcome of claim)
- 2) It is probable that the claim will succeed, in which case provision needs to be made.

Considering that it is common cause that rhino horn is ingested by humans, provision needs to be made for each probable lawsuit, or class action, that may arise from a lack of safety research by the suppliers - in this case the SA Government.

This is conservatively estimated at R150 Billion, calculated as follows:

30 tonnes of horn causing ill health in 150,000 victims - each claiming R1 Million in compensation for loss of brain function

Conclusion

Without due diligence in medicinal safety, any trade discussions conducted by this committee will not only expose the South African taxpayer to probable successful class action lawsuits for negligence, but also place all rhino in further danger due to messages of value that flies in the face of CITES requested demand reduction strategies.

SA signed a treaty to help reduce demand, not to fuel it.

Our recommendation is for South Africa to put all effort behind demand reduction, by destroying the stockpile and ceasing all messages of value.

The conservation status of the Southern White Rhinoceros should be reviewed and CITES should reclassify the species under Appendix I.



References

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- <http://www.wildact-vn.org/>
- <http://www.cites.org/eng/com/sc/62/E62-47-02-A.pdf>
- <http://awsassets.panda.org/downloads/traffichinoreportsummary.pdf>
- <http://faktoider.blogspot.com/2011/11/do-rhinoceros-horns-cause-autism.html>

The End

Created by Margot Stewart and
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Wild and Free South Africa

<http://www.wildandfree.org.za>

Rhino painting on cover page courtesy of
Ian Jamie Smith