

Tiger Image on Medicinal Plasters Serve as a Cue for Traditional Medicine Consumers

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Abstract

In the past, Musk and Tiger Bone Plaster (Tiger Bone Plaster for shorter) was one of most common non-prescription Traditional Chinese Medicine (TCM). Since 1993, China banned all trade in tiger bones and its derivatives in 1993. Musk deer were up-listed as Category I State Key Protected Wild Animal Species in China in 2002. The plaster manufactures changed the prescription of Tiger Bone Plaster and used synthetic musk and herb medicines and changed the name of Tiger Bone Plaster to "Musk and Bone Strengthening Plaster" but packages of some brands of the plasters still carry a tiger's image on it. Thus, consumers still consider the plasters as "Tiger Bone Plaster" because of the tiger image on the package. To investigate the consumer perception and behaviors of "Musk and Bone Strengthening Plaster", we surveyed 418 citizens in Beijing in 2014. We found that 43.78% of respondents alleged that they had used "Tiger Bone Plaster". When we inquired, almost all of respondents confirmed that the plasters they had used were "Musk and Bone Strengthening Plaster". Presumably, tiger's image on the plaster package produces a conditional stimulus to the consumers. Consumers preferred buying the plasters packed with tiger's image printed on the package. In fact, no people had really consumed Tiger Bone Plaster in this investigation. For the sake of protecting tigers, we argue the manufacturers to remove the tiger image from the "Musk and Bone Strengthening Plaster" according to the regulations of CITES.

Keywords: Conditional stimulus; Consumer perception and preference; "Tiger Bone Plaster"; Tiger's image

Introduction

Due to the habitat loss and fragmentation, coupled with depletion in prey and continued illegal poaching, the tiger habitat has shrunk by as much as 41% during the past 10 years and wild tigers occur in just 7% of their history range [1]. Currently, there are only about 3,000 wild tigers (*Panthera tigris*) in the world and the populations are still decreasing [2]. Illegal trade in tiger bones for traditional medicine and skins for ornamentation and collection are threats to wild tigers [2-5]. All tigers and other Asian big cat species are listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and that commercial international trade has been prohibited since 1975 [6]. Tigers should not be bred for trade in their parts and derivatives [7].

Musk and Tiger Bone Plaster (Tiger Bone Plaster for shorter) was one of most common non-prescription Traditional Chinese Medicine (TCM) for treating traumatic injury and rheumatism in TCM market. In 1993 China banned all trade of tiger bones and the plaster manufactures stopped using tiger bone and musk as ingredients of the Tiger Bone Plaster, which was renamed the "Musk and Bone Strengthening Plaster" [8]. Plaster manufactures instead used synthetic musk and herb medicines in the "Musk and Bone Strengthening Plaster" ever since. After the trade ban on Tiger Bone and Rhino Horn, a significant legal industry in tiger bones and medicines made from tiger bones was closed down in China [3,9,10]. Of 663 pharmacies and shops in 26 cities, only 3% claimed they supply of tiger bones [4].

Investigations on the medicine market and TCM producers showed that the trade in tiger bones had been effectively controlled [4,5,11]. A recent study on the TCM market indicated that the average presence of tiger bone stalls was only 0.8-1.4%, and all the operators know about related tiger bans or regulations [12].

An investigation on the consumption of tiger products in China showed that 38% of respondents claimed to have used "Tiger Bone Plasters". It is common to find the tiger's image on the package of plasters but the plasters did not list tiger bone as an ingredient because that would be illegal [13]. Since Tiger Bone Plaster was the most frequently used TCM contained tiger bones, and now "Tiger Bone Plaster" no longer contains any tiger bone; the number TCM users who actually used tiger bones may be overestimated. Presumably, people were misled by the tiger's image printed on the package. Then, what are the TCM users' perceptions and consumption preferences on these plasters with tiger image on the package?

Materials and Methods

Sampling method and questionnaire design

We carried out a questionnaire survey in Beijing in July and August 2014. A stratified random sampling method was adopted to selected citizens who had lived in Beijing for at least 1 year and were over 18 years old [13-15]. First, we investigated that whether the respondents had used "Tiger Bone Plaster" or not; then, we inquired into the users of "Tiger Bone Plaster" whether the plaster they had used had a tiger image on the package. At last, we showed the users the packages of different kinds of "Musk and Bone Strengthening Plaster" brands

(Supplementary Figure 1) and asked them whether the plasters they had used is “Tiger Bone Plaster”, or “Musk and Bone Strengthening Plaster” or something like that. If at the beginning the respondents alleged that they had used “Tiger Bone Plaster”, but then they confirmed that the “Plaster” they had used was “Musk and Bone Strengthening Plaster” or something like that, we will ask them why the answers to this question were inconsistent.

Consumption scenarios

We designed 2 consumption scenarios by adopting stated preference techniques to explore the preferences of respondents [15,16]. Before answering the questions, respondents were asked to recall actual past experiences of purchasing or using non-prescription medicine products and imagine that current consumption scenarios were real. After that, the respondents were asked to imagine that they were suffering from a pain and feeling discomfort, thus they might need to buy medicinal plasters for treatment. In scenario 1: there were 8 kinds of “Musk and Bone Strengthening Plasters” available to choose, and 4 of them were packed with tiger images on the packages, and the rest did not have tiger images. In scenario 2: there were 8 kinds of plasters available to choose, and 4 of them named “Musk and Bone Strengthening Plaster”, and the rest named “Musk and Tiger Bone Plaster” (Supplementary Figure 1).

Results

The results showed that a total of 43.78% respondents (418) alleged that they had used “Tiger Bone Plasters”. 97.81% (179) of the users claimed that they had found a tiger’s image printed on the package of “Tiger Bone Plasters” that they had used. In particular, 91.26% (167) of users confirmed that the “Tiger Bone Plasters” they had used were “Musk and Bone Strengthening Plaster” or other kinds of plasters, rather than “Tiger Bone Plasters”. Although only 1.64% (3) user alleged that the plasters they had used were “Tiger Bone Plaster”, they were unsure whether the products used actually contain tiger ingredients. There were few, even no people had really consumed the medicinal plasters which contain tiger bone as ingredient. These consumers were misled by the image of tiger on the package. Furthermore, the results showed that there more people would choose plasters printed with tiger images (0.24 ± 0.04) than those without tiger images (0.10 ± 0.03) in scenario 1 ($t=2.553$, $df=6$, $P=0.043<0.05$), there were no significant differences between the selection frequencies of “Musk and Bone Strengthening Plaster” (0.20 ± 0.02) and “Musk and Tiger Bone Plaster” (0.14 ± 0.03) ($t=-1.499$, $df=6$, $P=0.185>0.05$). People have a preference for plasters with tiger’s image because the image made them recall the old “Tiger Bone Plaster”, though 61.72% of the respondents thought that tiger’s image was used as a brand symbol.

Discussion

Tiger’s image on the plaster produced a habitual thinking and even a conditional stimulus that tiger image was associated with the “Tiger Bone Plaster”. Consumers were misled by the tiger’s image printed on the package. Conditional stimuli consist of consumption objects such as brand [17]. More than 40 percent of respondents had used “Musk and Bone Strengthening Plaster” in this study, thus whether the plaster really contained tiger bone or not, consumer will still use the plasters.

Tiger bone was believed to be more effective in ancient tenets of TCM [4,13,18,19]. Tiger image is a famous brand; it takes advantage of “brand effect” to use the tiger’s image on plasters [13]. The tiger image

relieves consumers’ memories of “tiger bone”, fosters and reinforces a habitual thinking of consumers that the plasters still contain tiger bone as ingredients. Conditional stimulus may consist of a new brand that carry an image belong to a famous brand [17]. For the sake of protecting tigers and deterring consumption motivations that triggered tiger poaching and illegal trade, the manufacturers should remove the tiger image from the “Musk and Bone Strengthening Plaster” and related products according to the regulations of CITES [6,20].

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