



On the Efficacy of Chinese Herbs for Survival Rates of Breast Cancer Based on Taiwan's National Health Insurance Research Database (NHIRD)



Ying Hsiu Lin¹, Wen Chieh Fang³, Jung-Nien Lai², Hsiu-Chia Cheng¹ and Kun Chan Lan^{1,2*}

¹Department of Computer Science and Information Engineering, National Cheng Kung University, Taiwan

²China Medical University, Taiwan

³Department of Geomatics, National Cheng Kung University, Taiwan

*Corresponding author: Kunchan Lan, Department of Computer Science and Information Engineering, National Cheng Kung University, Taiwan, Email: klan@csie.ncku.edu.tw

Submission: June 01, 2018; Published: July 09, 2018

Abstract

Our research employs statistical analysis based on a large national database to study the efficiency of Chinese herbs for improving survival rates of breast cancer. People who used the four categories of herbal formula (安神之劑, 祛寒之劑, 祛痰之劑, 經產之劑) seem to live longer in our database.

Introduction

Some prior studies [1] showed that Chinese herbs can help the tamoxifen-treated female breast cancer patients relieve their treatment-induced symptoms and result in the decrease of the subsequent risk of estrogens receptor-positive cancer. Whether Chinese herbs can improve the survival probability of breast cancer patients remains as a question though. Our research employs statistical analysis based on a large national database to study the efficiency of Chinese herbs for improving survival rates of breast cancer.

Materials and Methods

In this paper, we have selected 960 subjects who are tamoxifen-treated female breast cancer patients from Taiwan's National Health Insurance Research Database (NHIRD) from 1998 to 2008. These subjects are selected from the NHIRD database of approximately more than 23 million people. These selected subjects were also treated with Chinese herbs during this period. We divided these subjects into two groups. One group survived more than 5 years after they were diagnosed with breast cancer. The other survived less than 5 years. Cox model [2], a commonly used regression analysis model, is used in our survival analysis. When there are covariates and risk factors in survival data, Cox model can be used to estimate the effect of these covariates on survival time and it can also be used to predict the probability of survival at a specific time.

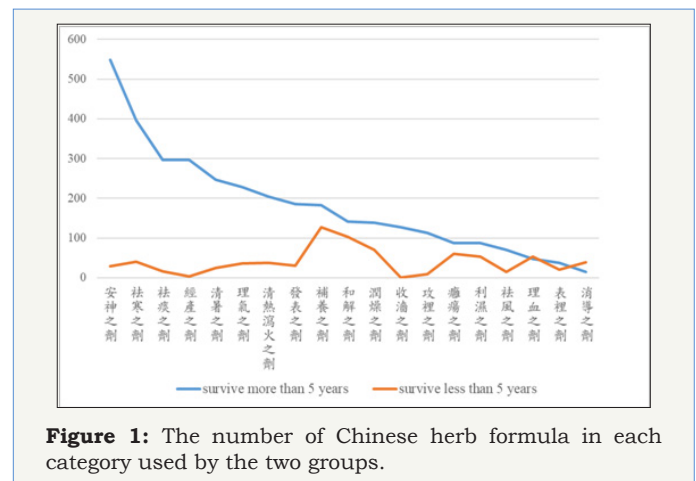


Figure 1: The number of Chinese herb formula in each category used by the two groups.

Results and Discussion

We first divide the Chinese herbs into different formula categories. There are significant differences in the top four categories of herbal formula, namely, prescription of An-Shen(安神之劑), prescription of Chu-Han(祛寒之劑), prescription of Chu-Tan (祛痰之劑) and prescription of Ching-Chan (經產之劑) between these two groups, as shown in Figure 1. For the Cox model analysis of these four categories of the herbal formula, in particular, two Chinese herbs, Suan-Zao-Ren-Tang (P-value=0.0346) and Xiao-Jian-Jung-

Tang (P-value=0.0358) have shown statistical significance. We analyzed all herbal formula used by tamoxifen-treated female breast cancer patients, then predicted the probability of survival, As shown in Figure 2, people who used the top four categories of herbal formula, prescription of An-Shen(安神之劑), prescription of Chu-Han(祛寒之劑), prescription of Chu- Tan (祛痰之劑) and pre-

scription of Ching-Chan (經產之劑), seem to live longer in our database. This suggests that these types of Chinese herbs may improve probability of survival (Table 1). In particular, Suan-Zao-Ren-Tang has shown statistical significance, and it's also one of the top ten herbal formulas among all TCM prescriptions recorded in Taiwan's National Health Insurance Research Database (NHIRD).

Table 1.

Prescription	Herb Name
Prescription of mental stress relief (安神之劑)	Tianwangbuxin Dan (天王補心丹)
	Wendantang (溫膽湯)
	Chaihujialonggumuli soup (柴胡加龍骨牡蠣湯)
	Suanzaorentang (酸棗仁湯)
	Guizhi keel oyster soup (桂枝龍骨牡蠣湯)
	Ganmai Dazao (甘麥大棗湯)
	Yokukansan (抑肝散)
	Sadashi pill (定志丸)
Prescription of astringent (收瀉之劑)	Angelica six yellow soup (當歸六黃湯)
	Yupingfengsan (玉屏風散)
	Sang cuttlebone scattered (桑螵蛸散)
	Golden solid Pills (金鎖固精丸)
Prescription of wetness elimination (利濕之劑)	Lingguizhugan soup (苓桂朮甘湯)
	Wulingsan (五苓散)
	Anti-had Astragalus soup (防己黃耆湯)
	Zhulingtang (豬苓湯)
	Yin Chen Wu Ling San (茵陳五苓散)
	More handmaiden soup plus surgery (越婢加朮湯)
	Yiyiren soup (薏苡仁湯)
	San Wulin (五淋散)
	Eight are scattered (八正散)
	Erzhu soup (二朮湯)
	Hydraulic conductivity Poria soup (導水茯苓湯)
	YCHT (茵陳蒿湯)
	Notopterygium wins wet soup (羌活勝濕湯)
	Five skin drink (五皮飲)
	Separately sterilized soup (分消湯)
	Less than half XIA Poria soup (小半夏加茯苓湯)
	Guiling Zhu Tang Gan (桂苓甘朮湯)
	Castor seed distinguish drink (葶藶分清飲)
	Wood fangchi soup (木防己湯)
	Prescription of inside attacking (攻裡之劑)
Wood betel pills (木香檳榔丸)	
Xiaochengqi soup (小承氣湯)	
Tiaowei Cheng Qi Tang (調胃承氣湯)	
Dachengqitang (大承氣湯)	

Prescription	Herb Name
Prescription of reconciliation (和解之劑)	Jiaweixiaoyaosan (加味逍遙散)
	San Huoxiangzhengqi (藿香正氣散)
	Sinisan (四逆散)
	Chaihushugan soup (柴胡疏肝湯)
	Xiaochaihutang (小柴胡湯)
	Xiaoyaosan (逍遙散)
	SGD (芍藥甘草湯)
	Chai trapped soup (柴陷湯)
	Pills, metyrapone (加味逍遙丸)
	Xiaochaihutang to participate (小柴胡湯去參)
	Coptis soup (黃連湯)
	Chaihuguizhi dry ginger (柴胡桂枝乾薑湯)
	VI soup (六和湯)
	Licorice Xie Xin Tang (甘草瀉心湯)
	Coptis donkey-hide gelatin soup (黃連阿膠湯)
	Zhuru Wendantang (竹茹溫膽湯)
Ginger Xie Xin Tang (生薑瀉心湯)	
Prescription of double solution (表裡之劑)	Dachaihutang (大柴胡湯)
	Yinqiaosan (銀翹散)
	Chaihuguizhi soup (柴胡桂枝湯)
	Fang Feng Tong Sheng San (防風通聖散)
	Five scattered plot (五積散)
	Apricot Su San (杏蘇散)
	Sang Ju Yin (桑菊飲)
	Hong Su San (香蘇散)
	Su apricot drink (杏蘇飲)
	Shensu drink (參蘇飲)
	Pueraria skullcap Coptis soup (葛根黃芩黃連湯)
	Three yellow plaster soup (三黃石膏湯)
	Double dissolution (雙解散)
Twig peony soup (桂枝加芍藥湯)	
Prescription of reduction (消導之劑)	Pingwei (平胃散)
	Xiangsha Liujunzi (香砂六君子湯)
	Weiling soup (胃苓湯)
	Paul and the pill (保和丸)
	An Powder (安中散)
	Modified Pingwei (加味平胃散)
	Qiweibaizhu Powder (七味白朮散)
	Fat child pill (肥兒丸)
Gehua wake soup (葛花解醒湯)	

Prescription	Herb Name
Prescription of hotness elimination (清暑之劑)	Source gas vitality soup (源氣活力湯)
	ShengmaiYin (生脈飲)
	Bamboo leaves gypsum soup (竹葉石膏湯)
	Ching Shu Qi Tang (清暑益氣湯)
	Shengmaisan (生脈散)
	Heart Shunin (心舒寧)
	White Tiger plus Ginseng (白虎加人參湯)
Prescription for expelling the hotness (清熱瀉火之劑)	Longdan (龍膽瀉肝湯)
	BanxiaxiexinTang (半夏瀉心湯)
	Qingwei Powder (清胃散)
	Daochi Powder (導赤散)
	Mannose disinfection Dan (甘露消毒丹)
	Pure heart lotus drink (清心蓮子飲)
	San cocklebur (蒼耳散)
	Wash liver eyesight soup (洗肝明目湯)
	Huanglianjiedu soup (黃連解毒湯)
	Qingyan Lee diaphragm soup (清咽利膈湯)
	Lianggesan (涼膈散)
	Puji disinfect drinking (普濟消毒飲)
	Bupleurum Liver soup (柴胡清肝湯)
	Yu Nvjian (玉女煎)
	Jingjielianqiao soup (荊芥連翹湯)
	Huanglianshangqing pill (黃連上清丸)
	Liangge dispersed nitrate Huang bellflower (涼膈散去硝黃加桔梗)
	Bellflower soup (桔梗湯)
	Diarrhea White Powder (瀉白散)
	Pulsatilla soup (白頭翁湯)
	On clear wind scattered (清上防風散)
	White Tiger soup (白虎湯)
	Warm clear water (溫清飲)
	San Huang Xie Xin Tang (三黃瀉心湯)
	Wash liver eyesight scattered (洗肝明目散)
	Pure heart and diaphragm soup (清心利膈湯)
	Clear soup on the wind (清上防風湯)
	Nourishing yin soup (滋陰降火湯)
	HQT (黃芩湯)
	Angelica Long Hui Wan (當歸龍薈丸)
	Diarrhea yellow powder (瀉黃散)

Prescription	Herb Name
Prescription of blood treatment (理血之劑)	Xuefuzhuyu soup (血府逐瘀湯)
	Tang Shu by promoting blood circulation (疏經活血湯)
	Rhubarb Root Soup (大黃牡丹皮湯)
	Traumatology Fuyuan Huoxue Tang (傷科復元活血湯)
	BYHWD (補陽還五湯)
	Shaofuzhuyu soup (少腹逐瘀湯)
	Gexiazhuyutang (膈下逐瘀湯)
	Body pain Zhu Yu Tang (身痛逐瘀湯)
	GFW (桂枝茯苓丸)
	Huaihua Powders (槐花散)
	Taohongsiwutang (桃紅四物湯)
	Danshen tablets (複方丹參片)
	Zijin Dan orthopaedic (正骨紫金丹)
	Traumatology Fuyuan live soup (傷科復元活湯)
	Tongqiaohuoxue soup (通竅活血湯)
	Four pills (四生丸)
	Fuyuan Huoxue Tang (復元活血湯)
	Didangtang (抵當湯)
Prescription of Qi treatment (理氣之劑)	Dingchuantang (定喘湯)
	Banxiahoupu (半夏厚朴湯)
	Su soup Jiangqi (蘇子降氣湯)
	Xuanfu Ruddle soup (旋覆代赭石湯)
	Orange soup Zhuru (橘皮竹茹湯)
	Shun Qi San Linderera (烏藥順氣散)
	Mysterious soup (神秘湯)
	Yueju pill (越鞠丸)
	Ling Gan Xin Xiaren ginger soup (苓甘薑味辛夏仁湯)
Prescription for expelling the wind (祛風之劑)	Xiao Feng San (消風散)
	TGD (天麻鈎藤飲)
	Duhuojisheng (獨活寄生湯)
	Juanbi soup (蠲痺湯)
	Danguiniantong soup (當歸拈痛湯)
	Sanbi soup (三痹湯)
	Guizhishaoyaozhimu soup (桂枝芍藥知母湯)
	Goutengsan (鈎藤散)
	Empty paste (清空膏)
	Clear soup on Juan Tong (清上蠲痛湯)
	Xiaoxuming soup (小續命湯)
	On the lower common gout pills (上中下通用痛風丸)
	Daqin macrophylla soup (大秦苳湯)
Xiaoxuming soup (續命湯)	

Prescription	Herb Name
Prescription of coldness elimination (祛寒之劑)	Huang Qi Jian Zhong Tang (黃耆建中湯)
	Lizhongtang (理中湯)
	Evodia soup (吳茱萸湯)
	Sini Tang (四逆湯)
	Xiao Jian Zhong Tang (小建中湯)
	Angelica Sini Tang (當歸四逆湯)
	Zhen Wu Tang (真武湯)
	Small active Dan (小活絡丹)
	Aconite soup (附子理中湯)
	Magnolia temperature in the soup (厚朴溫中湯)
Prescription of sputum elimination (祛痰之劑)	Magnolia Qingfei soup (辛夷清肺湯)
	San canopy (華蓋散)
	Erchen (二陳湯)
	Cough Powder (止嗽散)
	Banxiabaizhutianna soup (半夏白朮天麻湯)
	Qingfei soup (清肺湯)
	Rather cough pills (寧嗽丸)
	Gold boiling grass scattered (金沸草散)
	Gualou citrus aurantium soup (栝蒌枳實湯)
	Sheganmahuang soup (射干麻黃湯)
	Three sons to raise pro-soup (三子養親湯)
	Qingfeiyin (清肺飲)
	Clean air phlegm balls (清氣化痰丸)
	Clear phlegm soup (清氣化痰湯)
Prescription for expelling the illness (發表之劑)	Maxingganshi soup (麻杏甘石湯)
	Chuan Xiong Cha Tiao San (川芎茶調散)
	Pueraria (葛根湯)
	Jing scattered anti-sepsis (荊防敗毒散)
	Chaigejieji soup (柴葛解肌湯)
	XQLD (小青龍湯)
	Jiuweiqianghuo soup (九味羌活湯)
	Guizhi soup (桂枝湯)
	God is ten soup (十神湯)
	San magnolia (辛夷散)
	Ephedra soup (麻黃湯)
	Mahuangfuzixixin soup (麻黃附子細辛湯)
	Ma Xing Yi Gan Tang (麻杏薤甘湯)
	San ginseng sepsis (人參敗毒散)
Daqinglong soup (大青龍湯)	

Prescription	Herb Name
Prescription of production (經產之劑)	Complete with soup (完帶湯)
	Bozi Pill (柏子仁丸)
	Bawei below the belt (八味帶下方)
	Wenjing Tang (溫經湯)
	San Danguishaoyao (當歸芍藥散)
	Menstruation pill (調經丸)
	Xionggui glue Ai Tang (芎歸膠艾湯)
	With more pills (愈帶丸)
	Expiration drink
	Biochemical soup (生化湯)
Prescription of nourishing (補養之劑)	ZDP (知柏地黃丸)
	Buzhongyiqitang (補中益氣湯)
	Siwutang (四物湯)
	Liuweidihuangwan (六味地黃丸)
	Zuoguiwan (左歸丸)
	Qijudihuang pill (杞菊地黃丸)
	Jishengshenqiwan (濟生腎氣丸)
	Tiger potential pill (虎潛丸)
	San SHENLINGBAISHU (參苓白朮散)
	Lily solid impregnable (百合固金湯)
	Liujunzi (六君子湯)
	Yang Xin Tang (養心湯)
	Ba Wei Di Huang Wan (八味地黃丸)
	Ginseng Yang Rong Tang (人參養榮湯)
	St. more soup (聖愈湯)
	Sun Yiwei Tang (升陽益胃湯)
	YouguiWan (右歸丸)
	San Gentiana turtle (秦艽鱉甲散)
	Spleen soup (歸脾湯)
	Yiguanjian (一貫煎)
	Huanshaodan (還少丹)
	GFB (桂附地黃丸)
	Kidney eyesight soup (滋腎明目湯)
	Huang Qi Wu Wu Tang (黃耆五物湯)
	Sijunzitang (四君子湯)
	Shiquandabutang (十全大補湯)
	Qibaomeirandan (七寶美髯丹)
	Ba Zhen Tang (八珍湯)
	Tortoise plastic deer Immortals (龜鹿二仙膠)
	Qi smart soup (益氣聰明湯)
	Ney through ear soup (滋腎通耳湯)
	Ney through ear pill (滋腎通耳丸)
	Yin soup (補陰湯)
	Danguibuxuetang (當歸補血湯)

Prescription	Herb Name
Prescription of dryness moisturizing (潤燥之劑)	Pock Ren Wan (麻子仁丸)
	Zhigancao soup (炙甘草湯)
	Qingzao save lung soup (清燥救肺湯)
	Drink nectar (甘露飲)
	Flute sound broken pills (響聲破笛丸)
	Ophiopogon soup (麥門冬湯)
	Yangyingqingfei soup (養陰清肺湯)
	Runchang soup (潤腸湯)
	Sha Shen Mai Asp soup (沙參麥門冬湯)
	Runchang pills (潤腸丸)
	Tetsuteki pill (鐵笛丸)
	Yuquan pill (玉泉丸)
prescriptions for boil and carbuncle (癰瘍之劑)	Wuweixiaoduyin (五味消毒飲)
	Xian Fang Huo Ming Yin (仙方活命飲)
	Angelica Yin Zi (當歸飲子)
	Live drink to survive (真人活命飲)
	Scattered swollen ulcer Jian Tang (散腫潰堅湯)
	Sixteen gas stream drink flavour (十六味流氣飲)
	Yi word soup (乙字湯)
	Tory xiaoduyin (托裏消毒飲)
	Daughter asked scattered within (千金內托散)
	San pus (排膿散)
	Torrey disinfection scattered (托裏消毒散)

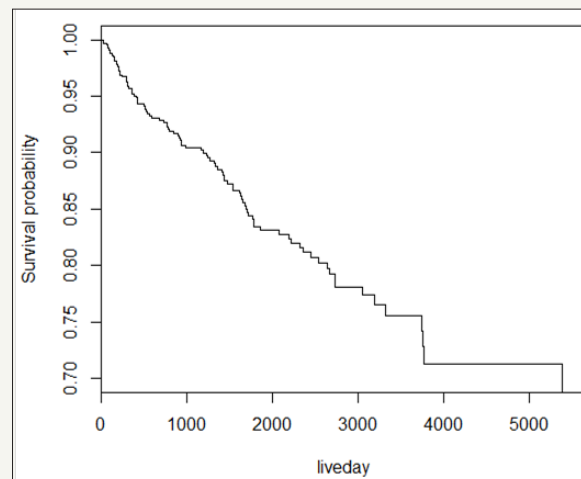


Figure 2: Survival probability curve.

Conclusion

Survival analysis predicts that the probability of those who survive more than 2000 days with Chinese herbs is more than 80%. Given that the small sample size of our data, our results are not conclusive and further study is needed.

References

1. Tsai YT, Lai JN, Wu CT (2014) The use of Chinese herbal products and its influence on tamoxifen induced endometrial cancer risk among female breast cancer patients: a population-based study. *J Ethnopharmacology* 155(2): 1256-1262.
2. Fox J (2008) Cox proportional-hazards regression for survival data. An R and S-PLUS companion to applied regression, pp. 1-18.



Creative Commons Attribution 4.0
International License

For possible submissions Click Here

[Submit Article](#)



Open Access Biostatistics & Bioinformatics

Benefits of Publishing with us

- High-level peer review and editorial services
- Freely accessible online immediately upon publication
- Authors retain the copyright to their work
- Licensing it under a Creative Commons license
- Visibility through different online platforms