

## Blue Ocean Strategy: What's the Role of Traditional Chinese Medicine in Cancer Care?

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With the advancement of the diagnosis tools and explosive knowledge in oncology, cancer has been more prevalent than decades ago. It is not too much to emphasize that cancer will be another chronic disease in the the twenty-first century [1]. As been observed, chemotherapy is dominant for more than 20 years; target therapy emerged promptly as more cancer pathways have been well defined. Furthermore, immune-oncology grasps public's attention in recent years [2,3]. Nevertheless, there is still another branch of medicine, existing for more than thousands years, though not dominant in the world, never fade away, that is Traditional Chinese Medicine with potential [4-6].

Traditional Chinese Medicine has been widely accepted in cancer care. It included several categories: Chinese Herbs and prescriptions; Acupuncture; Tai-Chi etc. Acupuncture has been accepted by western world early for its noninvasive, safety and potential effect. Numerous studies focused on mechanisms of acupuncture from perspectives of neurophysiologic and neuro-humoral regulations, addressing endogenous opioid peptides (EOPs) could account for the analgesic effect of acupuncture [7], as electroacupuncture analgesia (EAA) is antagonized by the opioid receptor antagonist naloxone [8]. Furthermore; acupuncture may provide analgesia by down-regulating pro-inflammatory cytokines, such as IL and TNF- $\alpha$ ; hence, acupuncture has been applied in different kinds of cancer pain; chemotherapy-induced nausea; vomiting; xerostomia or even psychologic issues as insomnia; depression. Even oncologists nowadays also notice that acupuncture may have potential effects in relieving musculoskeletal pain related to aromatase inhibitor in breast cancer or hot flush, a climatic syndrome in breast cancer patients underwent hormone therapy; just to name a few. An important theory connecting to acupuncture is a meridian theory, which viewed as mysterious to western scholars and physicians. From the TCM theory, human beings should keep Yin-Yang balance in order to achieve a status of harmony; and there are also six Yin meridians and six Yang meridians circulate over our body. Each meridian contains several acupoints, which could be stimulated in order to attain the status so called -De-qi, triggering the cytokine and neuropeptide release and palliating the pain and symptom sequentially. The so -called Yin-Yang can be simulated as vagal and sympathetic tone, so keeping Yin-Yang balance can restore the balance of autonomic symptom; and this theory can also be applied in cancer care when it comes to reconciling or integrate the theory of Western Medicine and Traditional Chinese Medicine.

Chinese Herbs are the main branch of TCM, though it is complicated and lack of system studies based on methods of modern medicine. However, the time is different. Maybe due to the bottleneck of the new drugs developing, more and more scientists pay attention to TCM herbs or formulas, supposing that these herbs or formulas also pose potential of cancer suppression or immune -enhancement. In fact, in past decades, some studies have indicated many ancient TCM have the effect of immune stimulation and cytotoxic effect of cancer cells in animal models [9,10]. Some popular herbs have also proved with property of inhibition of the cancer cells growth, such as Astragalus saponins (AST), may exert anti-carcinogenic activity in colon cancer cells through modulation of mTOR signaling and downregulation of COX-2, which together reduce VEGF level in tumor cells that could potentially suppress angiogenesis [11,12]; Agastachis Herba have antioxidant functions; atractylenolide poses positive effect in

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gastric cancer with cachexia [13,14]. What's more, some ancient TCM decoction, such as Si-Jun-Zi Tang, on the one hand, increase total lymphocytes, CD3+ and CD4+ cells and the CD4/Cd8 ratio, as well as IL2; on the other hand, decrease inflammatory cytokines-IL3, TNF-alpha, and CRP etc [15,16]. All of these studies prove that the potential of TCM formula can be justified with modern medicine theory based on perspectives of cell-molecular or interfering cancer pathways [9,17], being worth for more deep investigation. A recent novel study also proposed a new formula- "Kuna-Sin-Yin" may improve autonomic dysfunction in colon cancer from different perspectives [18,19]. These studies just evoke experts' attention that beyond the hot issues of target therapy, immune-oncology, TCM might provide us with another way to approach cancer care [20].

As for the Tai-Chi or Chi-Gong, they are mild exercises, which are deemed to improve mind-body connection [21,22]. Western people may view them as yoga-like activities while they are actually based on meridian theory [23]. Research indicates practicing Tai-Chi or Chi-Gong may ameliorate fatigue of cancer patients or even improve autonomic dysfunction symptoms which reflect in changes of heart-rate variability (HRV) [24,25]. Professionals also conducted relevant studies in lung, breast or even head and neck cancer patients [26,27]. This temperate exercise can help people redirect their energy (qi) within their body so that rejuvenating their body.

The purpose of naming these categories of TCM is to revoke the public's attention that we have many choices in coping with cancer care; yet the concerns are the lack of cross-talking between western medicine and TCM [28]; so that TCM has long been viewed as complementary medicine [6,29]. As an oncologist who also doubles majors in TCM and applies it in reality for years, I have to say that is a pity. When it comes to the methods and medicines to save patients' life, no one will deny that is the more, the better. While most of physicians, pharmaceutical and relevant industries focus on cancer pathway, target therapy, and immune-oncology medicine; I would like to remind experts from related fields that chances are that we might find something new, novel, and effective in cancer care from old TCM medicine in terms of exercising a blue ocean strategy. At least, these TCM formulas have been practiced for more than thousands years in different scenarios, which can provide their feasibility; yet need more clinical trials for further investigation. What's more, many studies indicate that active compounds in TCM formulas might have effect in interfering cancer pathway so there's no confliction between TCM and modern medicine; the problems result from too few studies focus on these potential drugs deeply. The difficulties lie on most TCM studies conducted in Asian areas. Even nowadays we can find more and more relevant topic published in international journals and conferences, it is indeed a relative minority and needs to be connected with modern medicine with qualified methods quickly. From my perspective, the lack of physicians or experts willing to communicate between TCM and western medicine might be an issue [30]; another issue depends on the funding and support of organizations such as government, research center or even pharmacy corporations. If scientists want to open a new era or pharmacy industries are willing to create a new market in cancer care; TCM would be worth investigation and investment. All relevant or medicine chemistry industries could do the research or develop new medicines based on those TCM of which proved with efficiency. New technique could be

applied in purifying or extracting active compounds in TCM; the formulation could be modified to fit modern people and more easily acceptable or even injecting. I believe it will be a blue ocean strategy when it comes to finding more potential drugs in cancer care or develop new medicines. That's what I want to evoke relevant professionals' attention.

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