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Review Article

Introduction to Kampo medicine for dental treatment — Oral pharmacotherapy that utilizes the advantages of Western and Kampo medicines



Pao-Li Wang^{a,*}, Akihiro Kaneko^b

^a Department of Bacteriology, Osaka Dental University, 8-1 Kuzuhahanazono-cho, Hirakata, Osaka 573-1121, Japan

^b Department of Oral Surgery, Tokai University Hospital, Japan

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Summary Kampo medicine is a medical system that has been systematically organized based on the reactions of the human body. At present, in Western, herbal medicines means the whole herbal product. It is being called Kampo medicine as a medicinal drug in Japan. Since 2012, the “National Health Insurance Drug Price Standards Related to Dental Treatment” published by the Japan Dental Association have included seven Kampo formulations. In 2015, the Japan Dental Association sent a “Kampo Education Plan for Dentistry” to all dental universities in Japan. Furthermore, the Japanese Society of Oral Therapeutics and Pharmacology compiled a summary of “Evidence for Kampo Treatment in the Field of Oral Surgery.” In addition, the phrase “including wakan-yaku” was included in the draft core model curriculum for dental education in 2016. Thus, Kampo medicine is expected to rapidly spread to the field of dental care and dental medical education. Therefore, the training of dentists with knowledge of both Western and Oriental medicine is required for the treatment of oral pain, periodontal disease, stomatitis, xerostomia, and other complaints concerning oral health. It is our hope that this paper provides a footing for dentists who wish to learn about Kampo medicine and incorporate it into clinical practice.

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* Corresponding author.

E-mail address: ohoh@cc.osaka-dent.ac.jp (P.-L. Wang).

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1. What is Kampo medicine?

Kampo is a type of "Oriental medicine" which refers to system of medicine. The term "Oriental medicine" refers to systems of medicine that originate in Oriental countries, including Traditional Chinese Medicine (TCM), Korean medicine (Koryo medicine), Ayurveda (traditional Indian medicine), and Kampo medicine, among others (Fig. 1). Traditional Chinese Medicine (TCM) was first introduced in Japan from China during the 5th and 6th centuries. During this period, many crude drugs and medical texts were brought to Japan. Until the Muromachi period 14th century to 16th century, diagnosis and treatment was performed according to the theory of Traditional Chinese Medicine that was introduced to Japan, which then subsequently developed independently in Japan. It evolved into and became established as a system of medicine that matches the environment and climate of Japan as well as the physical constitution and lifestyle of the Japanese population.

Kampo medicine as used in the modern medical system can be said to be a "unique medical system of Japan" that has been protected and developed as traditional Japanese medicine [1]. Currently, in Japan, 148 Kampo formulations are used for medical purposes. In China and Korea, physicians are classified as physicians of Western medicine, physicians of traditional Chinese or Korean medicine, or dentists who cannot prescribe traditional Chinese or Korean formulations. In Japan, physicians and dentists can prescribe Kampo medications.

2. What are the differences between Western medicine and Kampo medicine?

Western medicines, such as analgesics and antibiotics, are usually comprised of a single active ingredient and have a strong effect for one symptom or disease such as lowering blood pressure, killing bacteria, or ameliorating fever or pain. Furthermore, Western medicine, which is the basis of Western drugs, places an emphasis on examination in addition to the patient complaints. Based on the examination results, the physician explores the possible causative diseases and considers appropriate treatments. Thus, it can be said that Western medicine is effective for diseases that can be identified by examination and numerical values, e.g., from biochemical testing. By contrast, because

Kampo formulations contain multiple active ingredients, one formulation is effective for various symptoms (Fig. 2) [1].

For example, the active ingredient contained in the non-steroidal anti-inflammatory agent, "Loxonin (TM)," that suppresses pain and fever is loxoprofen sodium (60 mg). By contrast, Kampo formulations contain multiple crude drugs, as seen by the active ingredients contained in kakkon-tō (Ch: gé gēn tāng/En: pueraria decoction) extract granules, which eliminates the symptoms (e.g., cold, stiffness of shoulders) associated with heat in the body: pueraria (4.0 g), jujube (3.0 g), ephedra (3.0 g), licorice (2.0 g), cinnamon bark (2.0 g), peony (2.0 g), and ginger (2.0 g).

3. Basic approach in the selection of Kampo formulations: the concept of "patterns"

Many Kampo formulations cannot be fully effective unless they match the physical constitution and symptoms of the patient. In order to determine the constitution of a patient, a measure unique to Kampo medicine is needed. This measure is known as the "pattern" (Ch: zhèng/Jp: shō). In Kampo medicine, Kampo formulations are prescribed not only based on the individual symptoms of the patient, but also based on the "pattern" that puts a priority on the physical constitution of the patient. Typical patterns include "vacuity" (Ch: xū/Jp: kyo), "repletion" (Ch: shí/Jp: jitsu), "qi" (Ch: qì/Jp: ki), "blood" (Ch: xuè/Jp: ketsu), and "water" (Ch: shuǐ/Jp: sui). A physician familiar with Kampo medicine selects a Kampo formulation that suits the patient based on that "pattern" [2].

3.1. Vacuity and repletion

A person with sufficient physical strength and resistance is said to have a "repletion pattern," whereas a frail person with little physical strength is said to have a "vacuity pattern" (Fig. 3).

3.2. Qi, blood, and water

Qi, blood, and water are factors that indicate disharmony in the body.

When the three factors of qi, blood, and water properly circulate in the body, health is maintained. When one of these factors is insufficient, stagnant, or unbalanced, it

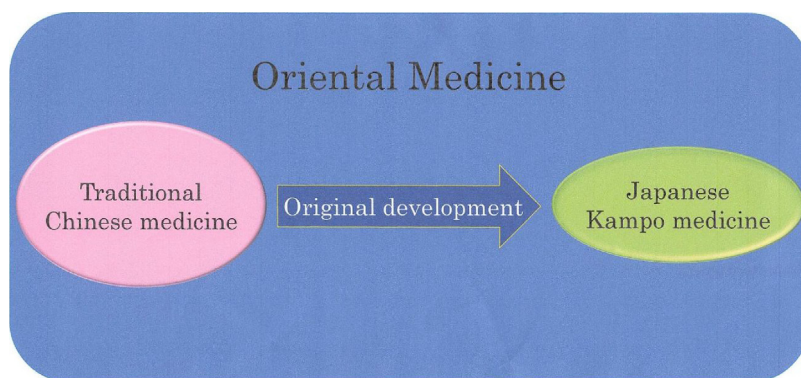


Figure 1 Kampo medicine is a type of Oriental medicine that uniquely developed in Japan.

Types of active ingredients
Western drugs: single ingredient (excluding combination drugs) Kampo formulations: multiple ingredients
Method of development
Western drugs: search for a single active ingredient Kampo formulations: find a favorable combination
Efficacy of drug
Western drugs : pinpoint and ameliorates symptoms Kampo formulations : ameliorates physical constitution

Figure 2 Differences between Western and Kampo medicine.

Western medicine contains only one kind of active ingredient and the pharmacological effect can only be expected from that ingredient alone. Kampo formulations are made by combining a wide variety of crude drugs and utilizing their pharmacological actions and interactions.

is thought to cause disharmony, disease, or disorder in the body. The condition of qi, blood, and water in the body is examined to discover where the problem lies (Fig. 4).

4. Commonly used Kampo formulations in dental treatment

Kampo medicine, which forms the basis of Kampo formulations, emphasizes the disease symptoms and physical constitution of the patient, and prescribes a formulation based on the diagnosis. For this reason, Kampo medicine is effective in the treatment of symptoms affecting physical constitution (e.g., functional menstrual pain, cold extremities, frail constitution) and physical disharmony that does not appear on examination (e.g., symptoms of menopausal disorders). In the field of dentistry, Kampo medicine can respond to so-called ill-defined complaints concerning oral health such as oral or tongue pain of unknown etiology and dry mouth (Fig. 5).

Which Kampo medicines are used in clinical practice for the treatment of oral diseases?

Here, we report on the findings of our research group concerning Kampo formulations used in dental clinics and hospitals affiliated with dental universities across Japan (Figs. 6–10) [3].

5. Approach to the selection of typical Kampo formulations for oral diseases in clinical practice

As explained in Section 3, the method of selecting Kampo formulations is originally based on the concept of a “pattern.” However, the method of “Kampo treatment selection based on disease name,” a formulation for the treatment of an oral condition is selected based on “indications or effects” listed in the prescription guidebook of Kampo formulations.

With regard to “Kampo treatment selection based on disease name,” the “National Health Insurance Drug Price Standards Related to Dental Treatment” published by the Japan Dental Association includes seven Kampo formulations [4] as follows: (1) rikkō-san (Ch: lì xiào sǎn/En: immediate

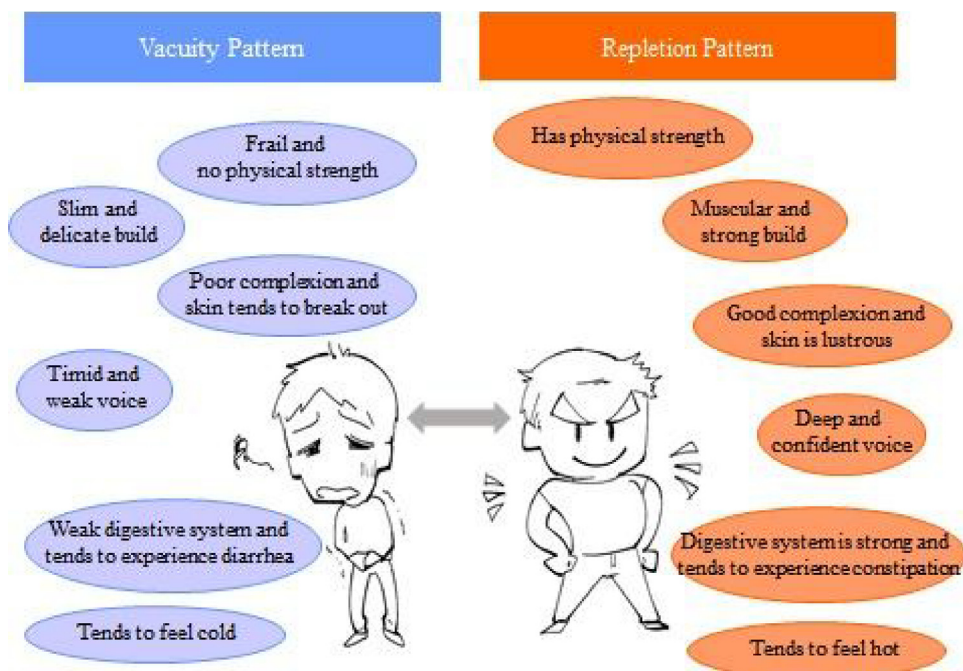


Figure 3 Vacuity and repletion patterns.

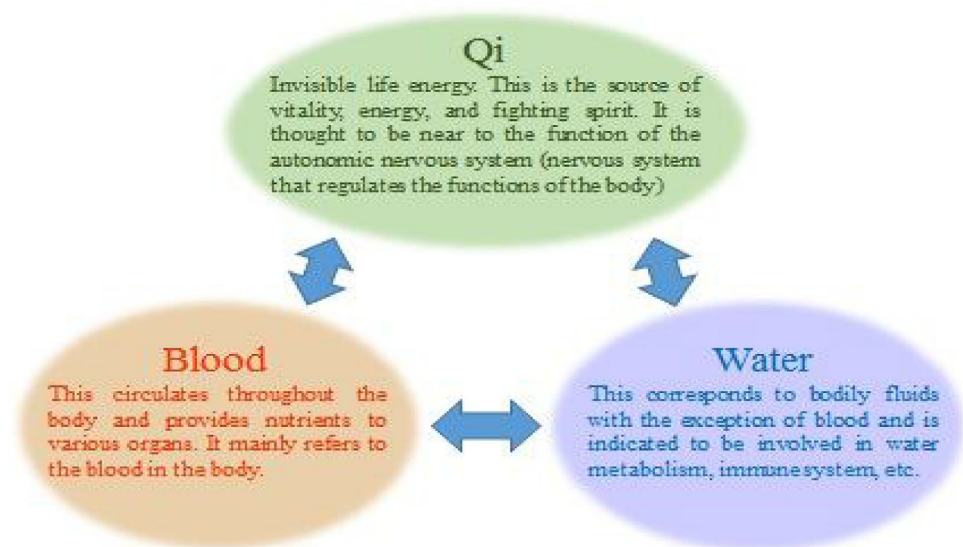


Figure 4 Balance of qi, blood, and water.

effect powder) for toothache, pain following tooth extraction, and gingivitis; (2) hange-shashin-tō (Ch: bàn xià xiè xīn tāng/En: pinellia heart-draining decoction) for stomatitis; (3) ōren-tō (Ch: huáng lián tāng/En: coptis decoction) for stomatitis; (4) inchinkō-tō (Ch: yīn chén hāo tāng/En: virgate wormwood decoction) for stomatitis; (5) gorei-san (Ch: wǔ líng sǎn/En: poria five powder) for xerostomia; (6) byakko-ka-ninjin-tō (Ch: bái hǔ jiā rén shēn tāng/En: white tiger decoction plus ginseng) for xerostomia; and (7) hainō-san-kyū-tō (Ch: pái nóng sǎn jí tāng/En: pus-expelling powder plus decoction) for chronic marginal periodontitis and gingivitis [5].

6. Efficacy of Kampo drug treatment on xerostomia from the viewpoint of Western and Kampo medicine

One study compared the chronological effects of Kampo formulations and cevimeline hydrochloride hydrate (Saligren®) on xerostomia [6]. Fifteen subjects who received continuous administration of Kampo medicine over a six-month period were selected as subjects. The mean increase in salivary secretion following administration of the Kampo formulation was as follows: byakko-ka-ninjin-tō, from 3.0 mL (at initial visit) to 3.66 mL (after six months); bakumondō-tō,

Poor conditions related to Qi



Qi vacuity: lethargy, fatigue, languor, decreased appetite, etc.

Qi stagnation/qi depression: dull headache, lump in throat, breathlessness, abdominal bloating, etc.

Qi counterflow: hot flushes, palpitation, perspiration, anxiety, etc.

Poor conditions related to blood



Blood stasis: menstrual irregularity, constipation, abdominal tenderness (pain on palpation), pigmentation, etc.

Blood vacuity: anemia, dry skin, hair loss, poor circulation, etc.

Poor conditions related to water



Water toxin/water stagnation: edema, dizziness, headache, diarrhea, urinary abnormality, etc.

Figure 5 Relationship between disharmony of qi/blood/water and pathology.

from 2.5 mL (at initial visit) to 3.75 mL (after six months); gorei-san, from 4.75 mL (at initial visit) to 5.25 mL (after six months). The mean increase in salivary secretion was as follows: byakko-ka-ninjin-tō, 0.67 mL; bakumondō-tō, 1.25 mL; and gorei-san, 0.5 mL. The mean degree of amelioration of subjective symptoms was as follows: byakko-ka-ninjin-tō, 75.8%; bakumondō-tō, 62.5%; and gorei-san, 70.0%. The mean increase in salivary secretion and mean degree of amelioration of subjective symptoms in patients who received administration of cevimeline hydrochloride hydrate were 3.75 mL and 32.5%, respectively. Cevimeline hydrochloride

hydrate was found to be most effective for mean increase in salivary secretion and significant differences were noted from the effects of the Kampo formulations (Fig. 11). The mean degree of amelioration of subjective symptoms was significantly higher in patients who received Kampo medicine in comparison with cevimeline hydrochloride hydrate (Fig. 12).

However, it has been reported that bakumondō-tō is less effective than other Western medicines [7]. Moreover, it has been reported that in a study comparing bakumondō-tō, cevimeline hydrochloride hydrate, and the H₂ blocker, niza-

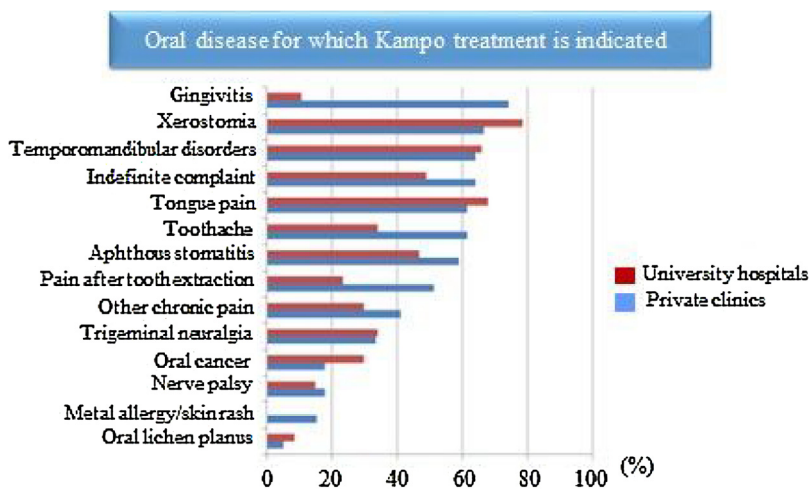


Figure 6 Oral diseases for which Kampo formulations are indicated. Kampo medicine is frequently prescribed for xerostomia and oral cancer in university hospitals, in contrast to dental practitioners who often prescribe them for periodontal disease, toothache, and pain after tooth extraction.

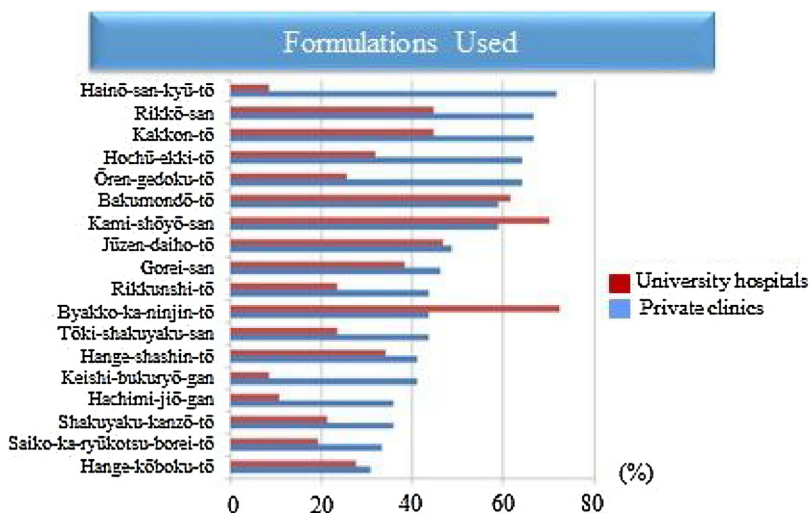


Figure 7 Kampo formulations used for the treatment of oral diseases. This is explained by the differences in the chief complaints between patients who visit university hospitals and dental clinics. Thus, Kampo medicines are selected according to the chief complaints treated at university hospitals and dental clinics.

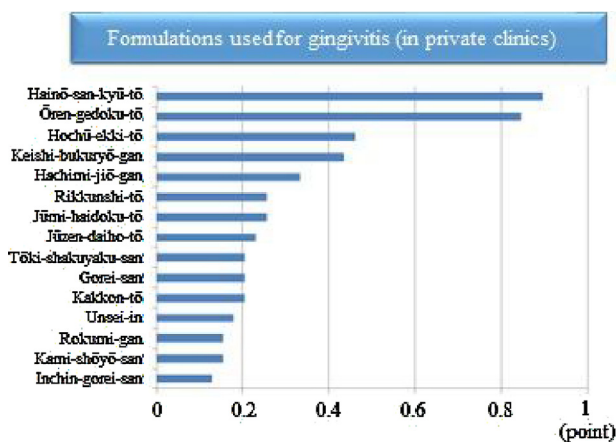


Figure 8 Kampo formulations prescribed for periodontal disease. This shows Kampo medicines often prescribed for periodontal disease by private practitioners.

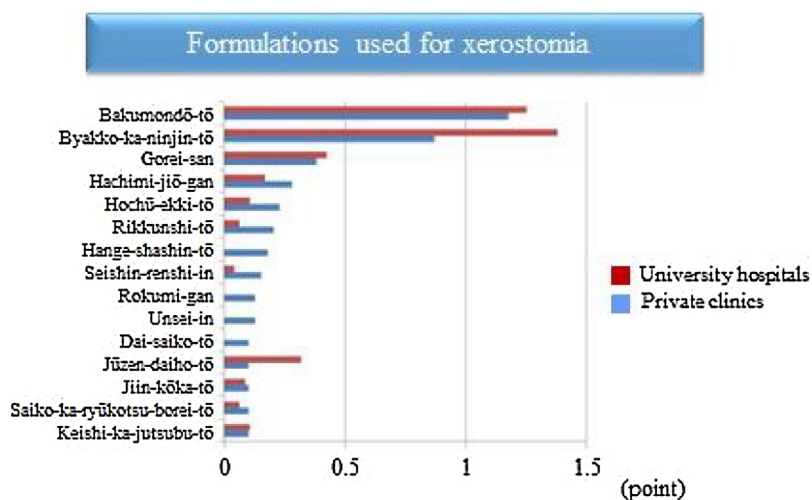


Figure 9 Kampo formulations prescribed for xerostomia.

The trends in Kampo medicines commonly prescribed for xerostomia and stomatitis are almost the same between university and dental practitioners.

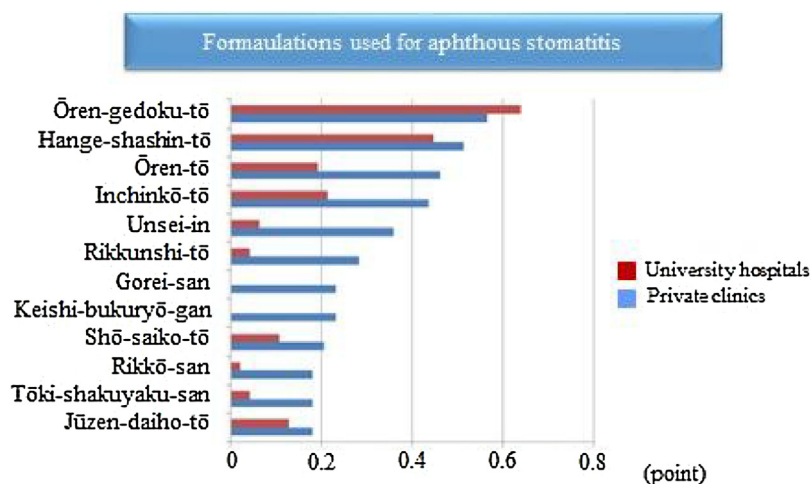


Figure 10 Kampo formulations prescribed for stomatitis.

The trends in Kampo medicines commonly prescribed for xerostomia and stomatitis are almost the same between university and dental practitioners.

tidine, in patients with xerostomia, bakumondō-tō did not significantly increase saliva levels. However, an amelioration of subjective symptoms was noted in all groups [8]. That is, it was reported that the therapeutic effects differ between patients. Furthermore, in the treatment of xerostomia, it is sometimes not possible to achieve patient satisfaction, even when only considering the amelioration of insufficient salivary secretion, and the best treatment method needs to be considered depending on what the patient is seeking. In this respect, the approach to treatment in Kampo medicine differs from Western medicine.

7. Conclusion

In Japan, Kampo formulations have been covered by medical insurance since the 1970s. Currently, approximately 150 formulations are approved for coverage in medical use and

numerous Kampo formulations are prescribed in dental practice. In recent years, the Japan Society for Oriental Medicine published the Kampo Medicine Evidence Report 2013 and the Japanese Society of Oral Therapeutics and Pharmacology published Evidence for Kampo Medicine in the Field of Oral Surgery [9,10].

However, dentists who have received a Western medicine-based education often do not understand Kampo medicine, as was formerly the same for physicians. All physicians are aware of the concept of “pattern” in selecting a Kampo formulation, but because insufficient education concerning Kampo medicine is provided in university and after graduation, physicians prescribe formulations based on “Kampo treatment selection based on disease name” [11,12]. Specifically, a Kampo formulation is selected based on the diagnosis of the pathology of the patient (e.g., vacuity pattern or repletion pattern) and the indication or effects of the formulation. However, Kampo formulations

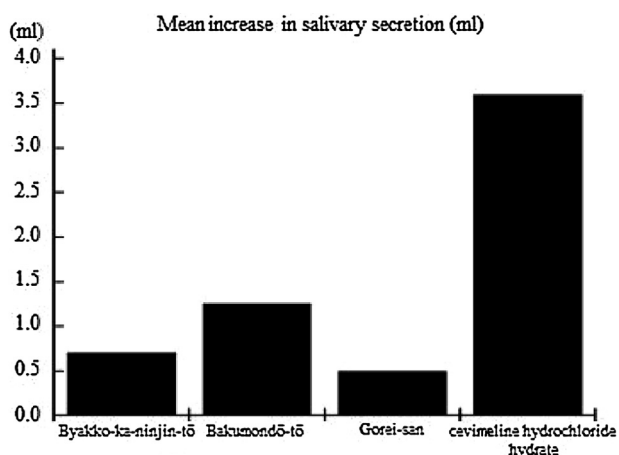


Figure 11 Mean increase in salivary secretion in patients who received byakko-ka-ninjin-tō, bakumondō-tō, gorei-san, or cevimeline hydrochloride hydrate. Adapted from Ref. [6].

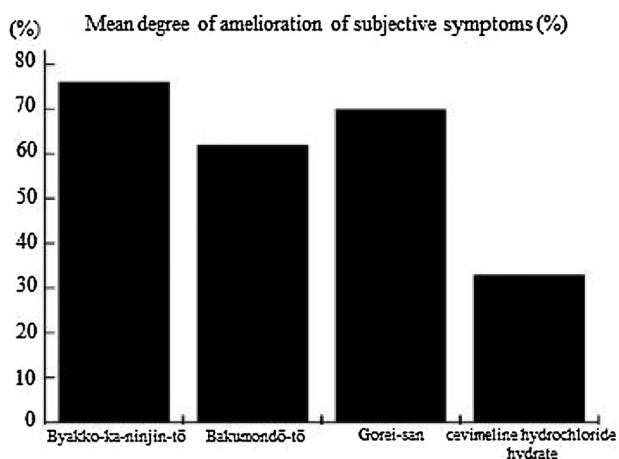


Figure 12 Mean degree of amelioration of subjective symptoms in patients who received byakko-ka-ninjin-tō, bakumondō-tō, gorei-san, or cevimeline hydrochloride hydrate. Adapted from Ref. [6].

cannot be prescribed based on the concepts of Western medicine, which is a reality that all physicians understand. In addition to the selection of a Kampo formulation based on disease name, the concepts of "pattern identification" and "formula-pattern matching" are essential [13].

To date, there is much discussion in the medical field concerning the method of selecting Kampo formulations [14]. In the future, as Kampo medical education in dental schools is improved, as has been seen in medical schools, a method

of selecting Kampo formulations based on modern medicine may be established.

Conflicts of interest

The authors have no conflicts of interest to declare.

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