

# JOVAN TUCAKOV: TENOR IN THE SERVICE OF THE PUBLIC HEALTH

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## **The benefits of music and singing on well-being**

According to the World Health Organization (1946/2006), well-being is a crucial aspect of people's health. This multidimensional construct presents not only the absence of disease or illness, but a complex combination of a person's physical, mental, emotional and social health factors, which procure the individual with a satisfaction with life, a sense of autonomy, control, self-realization, and the absence of depression and loneliness. Social determinants of health, both the one within and outside our individual control, are important part of backbone of public health. Active engagement in socio-cultural performing arts practices has therefore the potential to enhance, improve, and maintain wellbeing.

Interestingly, singing can exert an effect on well-being in various ways. People feel more positive after actively singing than they do after passively listening to music or after discussing about positive life events<sup>1</sup>. The improved mood is in part result of release of neurochemicals such as dopamine, serotonin and oxytocin, known to modulate stress, anxiety and depression. In synergy to the direct "chemical" result of singing, the social facet, which increases the well-being, is the promotion of a social closeness, the growth of network of people and the establishment of the mutual feeling of connection. Stronger outcomes can be perceived in choirs, where the effects are generalized and observable at faster rate.<sup>2</sup>

While the strength of connection between performing arts and healthcare seems to have diminished in modern times, the understanding of cultural perception of health remains important. Seeing that «Each nation, each place and each era have their own customs, habits, traditional clothes, songs, stories, dances, illnesses, epidemics, medicines, treatments and medicines preparations practices»<sup>3</sup>, written or recorded songs may present a valuable material to for understanding the philosophy of life of the people during a specific period of time.

Nevertheless, it is also interesting to analyze the impact of involvement of pharmacists in socio-cultural activities such as singing on a recognition of pharmaceutical profession and improvement of public health.

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<sup>1</sup> CLIFT S. AND MORISSON I. (2011).

<sup>2</sup> Ibid.

<sup>3</sup> TUCAKOV J. (1984).

## Music and singing in practice of well-being: examples from history

Singing is basic to human being and could be considered a special language that everybody unconsciously understands. With its origins going back to antiquity, singing is universally present in all human cultures. Ancient Greeks believed that harmony and beauty in the world are created and maintained by muses, Zeus daughters, after whom the music (“*muisike*”) got named.

In ancient polytheistic world, singing was a way of communication with divinities. Many rituals comprised chants, which aimed to attract Gods’ good will, stop the wars, fight drought or heal a disease. Clerks with perfect voice were more respected, because of the belief that they communicated better with God. Interestingly, chanting kept its importance in the religious rituals until today.

Moreover, music was used as a treatment for different diseases. By dancing and praying in a mystical setting, singing healers were trying to achieve a beneficial effect on the health of the patient. History of treatments remembers Galen’s recommendation to play the flute upon the suffering parts of the body, while a similar approach was proposed by Asclepiades (100BC) who recommended flute as a treatment of deafness<sup>4</sup>. In his work, Plato identified music interval ratios 2:3, 3:2, 4:3, 9:8 and 256:243 to be equivalent to life creation by God and defined music as an instrument playing an important role in forming a person’s virtues and morals.<sup>5</sup>

## Relation between music and plants in Balkan traditions

During a five-century long occupation by Ottoman Empire, without educated doctors, pharmacists, medicines or protection, nations in Balkan region were left alone to fight for their survival. In these difficult conditions, songs became the expression of their pursuit of liberty, freedom and the escape from everyday life. A foreigner delighted by traditional songs of Serbia once said, «If I lived for a thousand years and each day sang your songs, I couldn’t sing them all». National heroes, memorable wars, a love at first sight and feminine beauty were some of the main motives. Thanks to the valuable knowledge of their medicinal properties and toxicity transmitted from generation to generation, traditional songs of Balkan nations contain some of the most beautiful metaphors. Introduced in these songs, the abundant variety of plants that grow in this region became an important characteristic of national poetry and the identity of Balkan people.

One example is a comparison of a girl waiting for her beloved that never came with a willow tree in the song “My dear green willow tree”. The early blooming of a beautiful but naive girl who was hoping to meet the boy she liked was compared in this song to blooming of *Salix alba* L., *Salicaceae*, which happens prior to leafing, from March to May, before other plants do. Willow tree bark is known to contain glycoside salicin, which is used in the pain and fever treatment due to its metabolism to salicylic acid that

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<sup>4</sup> VESCELIUS E. A. (1918).

<sup>5</sup> PORTNOY J. (1949).



Fig. 1. Pharmacist's diploma, delivered by Faculty of pharmacy, University of Nancy, provided by courtesy of Tucakov family.



Fig. 2. Doctoral degree diploma, delivered by University of Nancy, provided by courtesy of Tucakov family.

happens in the body. Wormwood is often used as a symbol of sorrow and deep sadness. In the song “Where I planted basil, the wormwood sprouted”, the effect of metaphors in title accentuates the sadness of a young girl who will not marry the man she loves. Thus, the bitterest aromatic plant in Serbia, *Artemisia absinthium* L., *Asteraceae*, known to be toxic in higher concentrations because of thujone, grows where *Ocimum balsamicum* L., *Lamiaceae*, another aromatic plant with a pleasant smell was supposed to grow, meaning that all the hopes are lost.

The authentic interaction of plants with customs and singing present in the tradition of Balkan nations was a fertile ground for the work of Professor Jovan Tucakov, the first Serbian academician, pharmacologist and pharmacognosist. In collaboration with Serbian Academy of Sciences and Arts, Archive of History of pharmacy of University of Belgrade, as well as from numerous private collections of documents, photos, testimonies and recordings we collected valuable historical materials witnessing not only great achievements of Professor Tucakov, but also his incredible signing talent and joyful spirit. Some of the most valuable information was obtained during a discussion with his youngest daughter Ivanka and his granddaughter Jelena, to whom we would like to express our sincere gratitude.

### Jovan Tucakov - French student, Serbian professor and researcher

Born on 24<sup>th</sup> January 1905 in an agricultural family in Tchouroug (Austria-Hungary, current Northern Serbia), in his childhood Tucakov met with the honesty, hard work and poetry. Raised in a traditional environment, he was early exposed to variety of plants that grew in the fields of Vojvodina. This interest continued to be nurtured during class trips in nature, organized by his teacher Vasa Stajic, which were the occasion to meet with the diversity of flora of National Park Fruska Gora.



Fig. 3. Tucakov in lab, wearing his uniform, in Skopje around 1935, Fototeka SANU 1948/2000 (2005) [SANU-F 787/1].



Fig. 4. Tucakov in lab, in Skopje around 1935, by courtesy of Tucakov family.

Upon finishing his High School in Novi Sad in 1924, Tucakov enrolled in pharmacy school at University of Zagreb (Croatia) where in 1928 he obtained a pharmaceutical degree “*Magister Pharmaciae*”. Same year, Tucakov joined the army where begun his 12-year long career as pharmacist in the sanitary control laboratory of army of Yugoslavia. His knowledge, ambition and interest in pharmaceutical sciences were recognized by the army, which granted him a scholarship for specialization in bromatology in France.

In Nancy, Tucakov spent 4 years in Laboratory for testing of food, medicines and clinical analysis and in 1933 obtained a pharmacist diploma (figure 1). On the 12<sup>th</sup> February 1934, under the mentorship of Professor P. Gillot he defended the thesis “*Contribution à l’Etude des tanins végétaux: Leur dosage par le mélange chromatique*” and became a Doctor of pharmacy (figure 2).

Soon after obtaining the degree, Tucakov accepted the project proposed by the Army of Yugoslavia and founded the 1<sup>st</sup> chemical laboratory of military hospital in Skopje, Macedonia (figures 3 and 4).

In 1939 Tucakov became assistant professor at newly established Pharmaceutical Department and Medical faculty of University of Belgrade, where in 1940 he inaugurated the Institute of pharmacognosy and in 1945 became its director. His research activity ceased as the 2<sup>nd</sup> World War reached the territory of Yugoslavia, a period during which Tucakov experienced an important personal loss.

After witnessing a misery and a tragedy caused by war, Tucakov oriented his research activity towards the use of plants for prevention of famine and many diseases. This work will comprise not only collecting the information about local denominations and a traditional use of plants in different regions of Yugoslavia but also an important educational activity about the proper way of cultivation, drying, preparation and use of herbal drugs as

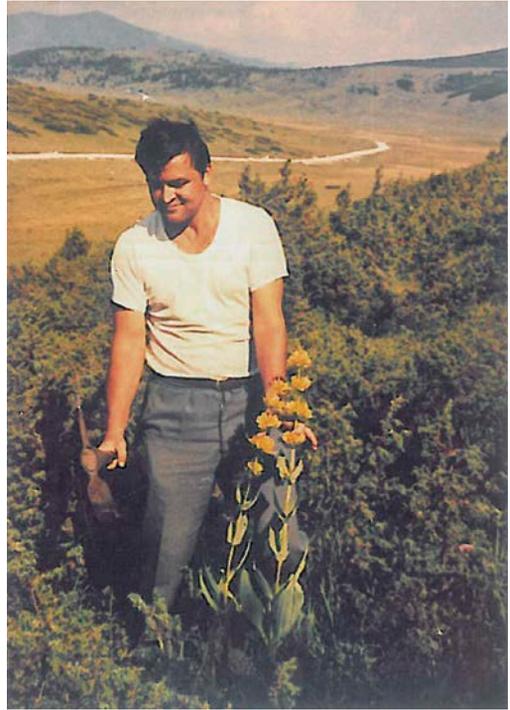
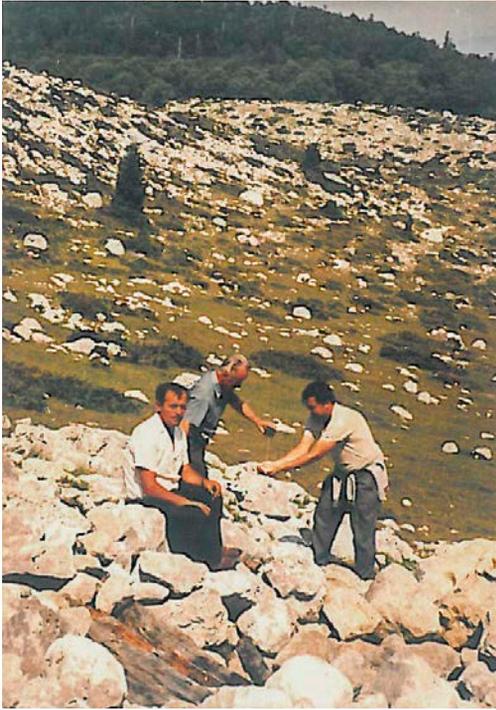


Fig. 5. Tucakov and associates in nature, provided by courtesy of Maksimovic B.

Fig. 6. B. Maksimovic during a fieldwork, provided by courtesy of Maksimovic B.

medicines (figures 5 and 6). «A medicine can only be good if it's affordable and available to masses» was the leading idea to consider plants as a valuable therapeutic source which use needs to be clearly explained and understood by everyone. By gathering traditional names of plants and experiences on their use, he adapted his scientific work to the vernacular, which in return became more important for an ordinary man who could benefit from its use. Decisive in the fight against the charlatanism and fraud, he wrote a series of articles under the name “Medicinal plants, truth and misconceptions” in the newspaper Express.

*«In our country, there are plenty of fields, pastures, forests, unprocessed land and therefore the abundance of medicinal plants. We fail to make use of it, because people are not interesting in harvesting it for profit, mostly because the information or knowledge about medicinal plants are lacking to those who see them grow.»<sup>6</sup>*

Guided by the idea that an agricultural Serbia could make part in growing industrialization of medicinal plants of which it would also benefit and save this “dead capital”<sup>7</sup>, he successfully convinced Serbian government to support the establishment of a facility which

<sup>6</sup> TUCAKOV J., A letter to Serbian Government, by courtesy of Pr. Slobodan Nikolic.

<sup>7</sup> TUCAKOV J., *Lekovito Bilje*.

would operate as a knowledge center for medicinal plants. As a result, in 1948 he founded the Institute for Medicinal Plant Research “Josif Pancic” that was under his management until 1973. Together with the Institute of Pharmacognosy and its laboratorium, the Institute for Medicinal Plant Research “Josif Pancic” became the most important center for cultivation, research, quality control of medicinal plants and training of healthcare professionals and students in Yugoslavia.

In his four decades-long work, Jovan Tucakov had invested a lot of effort and work, both in performing research activities and in establishing and maintaining good interpersonal relationships. Thinking that the strength for survival of a nation is maintained by the knowledge and expertise it possesses, he was devoted to raising and developing a scientific community and education of experts who would continue his mission after him. As Paolo Rovesti said in his commemoration speech about Professor Tucakov, his feverish work and his enthusiasm for the pharmacological science of his country made him accomplish a determining work that scaled-up the production of officinal drugs from an insignificant level prior to the war, to the commercial level counting among the highest in Europe.<sup>8</sup>

His sharp mind, optimism, cheerfulness and approachability helped him to make contacts and to transform them into often long-term friendships in Yugoslavia and abroad.

Many of his ideas were solutions to problems of great public interest. Research was mostly oriented to national flora and to smaller number of foreign species with the idea that their introduction and acclimatization could have scientific, therapeutic and industrial importance. United Nations FAO recognized his work where he defined that *Glycyrrhiza glabra* L. (*Fabaceae*) and other medicinal plants could be use as soil binders in sandy terrains and thus decrease a risk of sand erosions<sup>9</sup>. As in that one, in all his projects Tucakov tended to include collaborators with different expertise to achieve a greater benefit and application of the research, the idea that he transmitted to his scholars. Numerous were foresters, herbalists, biologists, pharmacists and medical doctors who participated in fieldwork organized by professor Tucakov in Yugoslavian mountains and valleys in search of natural habitats of important medicinal plants.

Thanks to a long-term selection of the most appropriate species for therapeutic use and his effort invested in the standardization of herbal drugs and essential oils, he brought Yugoslavia on a pedestal where were already England, India, France, Portugal and USA.

His scientific work was crowned by the most distinguished recognitions. On the 23<sup>rd</sup> October 1965 Tucakov received a title *Doctor honoris causa* at University of Clermont-Ferrand. Same year, on the 1<sup>st</sup> December, he was appointed a foreign corresponding member of French Academy of Pharmacy in Paris. In 1968 his work was recognized by Academy for cosmology and dermatology in Paris, where later he was appointed a managing director. In 1971 Tucakov became the 1<sup>st</sup> pharmacist to have a membership in Serbian Academy of Sciences and Arts. Until that moment, his scientific record comprised 23 books, monographs and manuals, more than 400 publications, discussions and articles, 30 elaborates and many other studies.

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<sup>8</sup> ROVESTI P. (1979), posthumous commemoration speech for J. Tucakov.

<sup>9</sup> Fao.org. 2022.

In 1969 Tucakov was awarded Lavoisier medal by French Academy of pharmacy, for his great scientific achievements and became an honorable lifelong member of Royal Pharmaceutical Society. In 1972 he was honoured by the Order of Merit for the People with a Golden Star.

### Tucakov and Music

In addition to his success in academia, research and industrialization of officinal plants, Tucakov was known as highly talented and educated singer who used a song to create cheerful moments on each occasion. His singing activity in various choir societies and on different occasions appears to be a leitmotif of Tucakov's life, which helped him to overcome even the toughest moments. Inspired by national poems and songs, his well-trained voice was a key that opened many doors in Yugoslavia and abroad. Two female figures played an important

role in his development of taste for music and tradition during his childhood. His mother Danica exposed him in his early days to music through various lullabies she sang to him. Through numerous poems, stories and fables his grandmother Marija Vukic oriented his young mind towards the connection with nature, plants and tradition.

His talent was discovered in his teenage years and was continued to be nurtured throughout his whole life. Prof. dr Dragoljub R. Zivojinovic indicates the singing in the monastery church in Kovilj, near Novi Sad, as the beginning of Tucakov's vocal journey that he started with his friend, Dr Vojislav Marjanovic<sup>10</sup>. During his studies in Zagreb, Tucakov was singing in famous Academic Choir Society "Balkan", considered as the best choir in Yugoslavian association for singing (figure 7). His remarkable tenor and expressive and emotional singing were arguments used by many choristers saying that he made a mistake by



Fig. 7. Choir "Balkan" in Kosovska Mitrovica, 1927, provided by courtesy of Tucakov family.



Fig. 8. Choir "Mokranjac" in Greece, 1936, provided by courtesy of Tucakov family.

<sup>10</sup> TUCAKOV J. (1988), 71-74.



Fig. 9. Festivity during a fieldwork in Kraljevo 1976, provided by courtesy of Maksimovic B.

not pursuing the career in Opera.<sup>11</sup> On one occasion during his stay in France, Tucakov performed as soloist a tenor part of Mozart's Requiem in Notre-Dame de Paris.

During his mission in Skopje (Macedonia), Tucakov was actively participating in the social life of the city through memberships in different societies. Activities in mountaineering and hunting societies were keeping him out in nature as much as possible, while the membership in the choir society "Mokranjac" allowed him to work on his talent for singing (figure 8).

As professor, he combined both of his passions on every occasion. Believing that students need to learn about plants and their proper use not only from the books, but also in the nature, he organized many fieldworks in mountains, dunes or along the seaside. On these occasions «professor would always sing with students up to late at night. Everyone who listened to him was impressed by his talent, voice and musicality.»<sup>12</sup> (figure 9)

In his memory of professor, Mr Ph Branko Maksimovic stated that Tucakov was as singer without equal. «Once, a group of French people got lost and came to our camp. We organized an unofficial singing competition with them, but when Professor who was a French student choose to join their side, we were totally defeated.»<sup>13</sup>

His passion for singing was known by all his colleagues. Knezevic stated in his memories of Professor Tucakov that «It couldn't be imagined a congress closing without one of professor's songs»<sup>14</sup>.

A close friendship with a family of Momcilo Mokranjac, the first toxicologist in Serbia, nurtured Tucakov's interest in singing and brought him valuable connections with musicians. Similar to Tucakov, Mokranjac was French student whose work significantly developed the pharmaceutical activity and studies in Yugoslavia. Momcilo's father, Stevan St. Mokranjac (1856-1914) was a prominent composer, musical educator and the most important figure of Serbian musical romanticism. Conductor of the Belgrade Choir Society and founder of the Serbian School of Music, Stevan remained remembered for composing music for children as well as the 15 choral suites "Garlands" (Rukoveti). His mother, Marija Mokranjac was born in an aristocratic and artistically oriented family Predic, that became

<sup>11</sup> TUCAKOV J. (1988), 71-74.

<sup>12</sup> TUCAKOV J. (1988), 28.

<sup>13</sup> TUCAKOV J. (1988), 59-64.

<sup>14</sup> KNEZEVIC S. (1978).

known for the work of Marija's uncle, Uros Predic, one of the marvelous painters of Serbian realism. She was musically talented and was since her young age a member of choir "Kornelije", where she met her future husband. Tucakov was an honored guest at various occasions organized by Mokranjac, which were the meeting occasions for remarkable artists, savants and functionaries.

Under the attack by Hungarian fascist in Vojvodina, 13 members of his family lost their lives, comprising his older son Ivan, his father, 2 brothers and their wives and sons. After this tragedy Tucakov will not sing for a long time. The silence was broken many years later in bohemian quarter of Belgrade, where he accepted to sing in honor of Jean Cassou, president of the society "French Yugoslavia" in Paris and a founder of gallery Palais de Chaillot.<sup>15</sup>

Influenced by work of composers for choral songs it is not surprising that Tucakov often choose to sing in public some of the most beautiful songs of Stanislav Binički, Isidor Bajic and Stevan Mokranjac, whose partitions were part of the private archive of Tucakov family. In 1954 in BVM Studio in Geneva, Tucakov even recorded three songs *Kad ja videh očitvoje (When I saw your eyes)*, *Po polju je kiša pala (It was raining over the field)* and *Da su meni oči tvoje (If I were closer to your eyes)*<sup>16</sup> arranged by Stanislav Binički (1872-1942), Serbian composer, conductor, and director of Opera. Famous for his piece "March on the Drina", it is possible that Tucakov met with Binički's work during the period of his military service. A closer connection with the composer could have happened through a friendship with family Mokranjac.<sup>17</sup> The choice of the songs confirms not only Tucakov's great talent and singing skills, but also his patriotism and a strong will to present some of the most beautiful Serbian musical creations to the entire World recovering from war.

There is an uncertainty about the extent to which Tucakov's interest in music was a motivation for his research of medicinal plants. Balkans nations' traditional songs abound of such elements in metaphors. It is possible to suppose that he discovered a treasury of national songs where such elements are present thanks to both his childhood environment and his great interest in traditional herbal medicine. For Tucakov singing was not only a personal artistic trait, but also the fuel for the invaluable work whose results created many opportunities for the future generations.

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<sup>15</sup> TUCAKOV J. (1988), 59-64.

<sup>16</sup> Audio recordings (1954).

<sup>17</sup> Discussion with Ivanka Tucakov.

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Photos and material from private collections of families Tucakov, Maksimovic and Nikolic.

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### *Abstract*

Well-being is a component of health, which manifests in a temporary satisfaction of the body's needs and in peace of mind. Among the different approaches used to attain and to maintain it, singing activity seems to be beneficial thanks to its neuroendocrine and socio-cultural effects acting in synergy. Some philosophers of Antique Greece defended the hypothesis about healing effects of music for different diseases. Conserved traditional songs of the Balkan's region are well known for their metaphors in which the officinal plants were used to describe warriors, people in love, young girl's beauty and even its sadness. The symbolism used to intensify and enrich descriptions denotes that Balkans people had a good understanding of both healing and harmful effects of plants, which were in those times the only available therapeutic option. Hence, for a better understanding of the healing practices of one nation, it could be of great interest to analyze its traditional songs.

Gathering knowledge about cultivation and use of officinal plants in traditional medicine of the region was the starting point for the work of Professor Jovan Tucakov, French student, Serbian academician. His fruitful work was recognized with numerous distinctions, including an honorary doctorate (University of Nancy, 1965) and the Lavoisier medal (Academy of Pharmacy, 1969). Tucakov was also known to be a good tenor. His active membership in choral associations in Serbia, Croatia, France and Macedonia hasn't yet been treated as a research topic. Different sources, including testimonies and audio recordings, suggest that music was the leitmotif of Tucakov's life and catalyst of his work. By its virtue, he succeeded creating strong bonds, making his personality stand out, but also healing grief in painful moments. Interpretation of scores of Mokranjac, Binički and other Yugoslavian composers not only created enjoyable collaboration during many farmacognosy fieldworks, but also contributed the development of the solid research and industrial activity of the country.