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LEGISLATIVE REGULATION OF TRADITIONAL MEDICINAL KNOWLEDGE IN
ERITREA VIS-À-VIS ERITREA'S COMMITMENTS UNDER THE CONVENTION
ON BIOLOGICAL DIVERSITY: ISSUES AND ALTERNATIVES

Senai W. Andemariam

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TABLE OF CONTENTS

1. Global Developments on Protection and Development of Traditional Medicinal Knowledge	133
1.1 Introduction	133
1.2 Interests Involved in Harnessing Traditional knowledge/Traditional Medicine	133
1.2.1 Sociological or Belief Interest	134
1.2.2 Economic Interest	134
1.2.3 Environmental Interest	134
1.2.4 Intellectual Property Interest	134
1.3 International Efforts to Protect and Harness Traditional Medicine	135
2. Traditional Medicinal Knowledge in the Eritrean Domain	137
2.1 Recognition of Traditional Medicinal Knowledge in Eritrea	137
2.2 Traditional Medicinal Use in Eritrea	137
2.2.1 Practices and Practitioners	137
2.2.2 Eritrean Medicinal Plants and ongoing Efforts to List Them	139
2.3 Policy and Related Efforts thus far Undertaken to Protect/Develop Traditional Medicinal Knowledge	146
2.3.1 Ministry of Health	146
2.3.2 Department of Environment	147
2.3.3 Ministry of Agriculture	147
2.3.4 Medicinal Plants and Drug Discovery Research Centre	147
2.4 The Possibility for Protection/Development of Traditional Medicinal Knowledge under Major National Legal Instruments in Eritrea	148
2.4.1 The Constitution of Eritrea	148
2.4.2 Intellectual Property Laws	148
2.5 Legal and Institutional Constraints in the Course of Preservation and Sustainable Exploitation of Traditional Medicinal Knowledge in Eritrea	150
2.5.1 Absence of a Comprehensive Intellectual Property Law	150
2.5.2 Apparent or Potential Misunderstanding on Who is Responsible for Regulating Eritrea's Traditional Medicinal Knowledge	150
2.5.3 Dearth of Human Capital	151
3. Towards Bringing Traditional Medicinal Knowledge into the Light	151
3.1 Legislative Experiences on Traditional Medicinal Knowledge	151
3.1.1 Kinds of Legislations	152
3.1.2 Substance of Legislations Specific to Traditional Medicinal Knowledge	152

3.1.3	The Act on Protection and Promotion of Thai Medicinal Intelligence	153
3.1.4	Why Specific Traditional Medicinal Knowledge Legislation for Eritrea?	158
3.2	Eritrean Traditional Medicinal Knowledge Legislation	159
3.2.1	Classes of Traditional Medicinal Knowledge	159
3.2.2	Formula and Text of Traditional Medicinal Knowledge	159
3.2.3	Form of Protection and Rights	159
3.2.4	Conditions for Protection	160
3.2.5	Institutional Administration	160
3.2.6	Access and Benefit Sharing	161
3.2.7	Manufacturing and Distribution	161
4.	Conclusions and Recommendations	162

1

GLOBAL DEVELOPMENTS ON PROTECTION AND DEVELOPMENT OF TRADITIONAL MEDICINAL KNOWLEDGE

1.1 Introduction

An old proverb in the Geez language – *e'ts yqietl e'ts yehieyw* (translated 'an herb kills, an herb cures') – borrowed from the narrations of an 89-year old monk of superb traditional medicinal knowledge (TMK) – is displayed at the doorpost of the Medicinal Plants and Drug Discovery Research Centre (MPDDRC) of the University of Asmara which centre, as one of its principal commitments, has been advancing research on TMK in Eritrea. The proverb personifies the rich, age-long knowledge of the Eritrean society on the curative powers of plants (herbs).

International organisations representing various interests have been awakened by the call to regulate TMK. However, a notable defect in the efforts by these organisations is that there seems to be little comprehensiveness in their efforts since most of these organisations view and regulate traditional medicinal practices from their perspectives only. The lack of comprehensive international regulation of TMK may have arisen from two causes. Firstly, existing international instruments cover TMK as part of a larger mass – traditional knowledge. Secondly, even the instruments directly related to TMK, such as those developed by the World Health Organisation (WHO), cover a specific interest – health, in the case of the WHO, for example – and fail to address other interests, such as trade and property rights, which are indispensable in regulating TMK.

A notable effort that may be adapted to the Eritrean situation is the ongoing effort by some regional organisations and countries to issue legislations or directives specifically governing TMK. However, adaptation of these legislations needs to keep in mind that Eritrea neither has a policy nor other legislations (comprehensive intellectual property laws, for

example) on the assumption of the existence of which laws on TMK are developed.

Rich in TMK resources as many developing countries as it may be, Eritrea has not, unlike a number of developing countries, yet developed a comprehensive policy-cum-legislation regulating TMK. Except for an indirect reference that may be made from them, existing national biodiversity framework instruments and various domestic laws in Eritrea are not adequate to govern TMK.

This article is based on one conceptual premise: despite the existence of rich TMK resource in Eritrea and Eritrea's obligations under Convention on Biological Diversity (CBD) to regulate TMK, there is no policy-legislation mass to be put on the other side of the scale. This article will argue that in regulating Eritrean TMK, a separate policy-legislation mechanism is preferable than the other alternative of keeping TMK as a component of a broader instrument regulating the larger package of traditional knowledge.

To concretise the conceptual framework, this article will first list the various interests involved in traditional knowledge and TMK. After a passing note on developments at international levels to regulate traditional knowledge/TMK, a sample of traditional knowledge/TMK legislations from some regions and countries will be presented. Then, by describing the wealth of TMK in Eritrea, the subsequent sections will highlight the dearth, or absence, of policy and legislation in Eritrea to protect and develop TMK at national levels and, in view of Eritrea's obligations under the CBD, make TMK available for use to human kind at large. Means for comprehensively regulating the practice of TMK in view of ongoing international efforts and the legislative experience of other countries will finally be suggested.

1.2 Interests Involved in Harnessing Traditional Knowledge/Traditional Medicine

Traditional knowledge, inclusive of TMK, is a reflection of age-old practices of a given society. The process of harnessing and regulating traditional

knowledge involves anthropological, economic, environmental and intellectual property interests. The global increase in the use of traditional medicine (traditional medicine)¹ keeps traditional medicine at the heart of these and other interests a balance of all of which must be maintained in any international or national legal instrument regulating TMK.

1.2.1 Sociological or Belief Interest

Traditional knowledge, as its name implies, is a knowledge linked to and derived from tradition, that is, it is a knowledge derived from the way of life in a given society. It, thus, carries an element of belongingness of the knowledge to the diurnal life of a group of people bonded in a sociological pattern.² Any action, law, agreement, measure or commitment related to traditional knowledge, therefore, has to reflect the complex web of the life of the community at hand. The concept of involving the community in the commercial or otherwise exploitation of traditional knowledge, developed by the 1992 CBD, is a testimony to the sociological/anthropological interest constituting traditional knowledge. Oftentimes, traditional knowledge may be linked to the belief system of a given community and may carry an element of sanctity. This may involve ritual dances, carved objects and pictures, specially knit threads etc.³

1.2.2 Economic Interest

Economic interest in traditional knowledge has intensified during the last 20 to 30 years. At the heart

of the traditional knowledge debates in organisations like the World Intellectual Property Organisation (WIPO), the World Trade Organisation (WTO), and the working parties of the CBD Secretariat meetings lies the treasure of economic benefits underlying the exploitation of traditional knowledge. It has been estimated that nearly a quarter of all pharmaceutical products worldwide are derived from plant sources originate from TMK.⁴ The concept of access and benefit-sharing mechanism developed by the CBD and the intricacy of developing an intellectual property regime for traditional knowledge buttress the fundamental truth that traditional knowledge is not only a sociological or environmental concept but a source of immense economic advantage as well.

1.2.3 Environmental Interest

With the evolution of environmental enlightenment beginning the 1970s which led to the concept of the environment being 'the common heritage of mankind' and the inclusion of every interest that needs preservation into the catchall concept of 'biodiversity' (particularly after the Rio Summit), traditional knowledge has become an independent entity worth preservation and conservation as part of the biodiversity. A number of international organs (the CBD Secretariat in particular) have now incorporated the basic principles of environmental preservation for traditional knowledge and a lot of progress has been made thus far.⁵

1.2.4 Intellectual Property Interest

At the forefront of the commercial exploitation of traditional knowledge has been deciding the legal

1 World Health Organization, WHO Traditional Medicine Strategy 2002-2005 (Geneva: WHO, 2002), available at http://whqlibdoc.who.int/hq/2002/WHO_EDM_TRM_2002.1.pdf.

2 For the sociological/anthropological/spiritual interest embodied in traditional knowledge, see WIPO, Intellectual Property and Traditional Knowledge (Geneva: WIPO, Booklet No. 2), available at http://www.wipo.int/freepublications/en/tk/920/wipo_pub_920.pdf.

3 After defining the term 'sacred', Professor Gervais submits these examples to discuss the concept of protecting, through intellectual property law, sacred intangible traditional knowledge. See D.J. Gervais, 'Spiritual but not Intellectual? The Protection of Sacred Intangible Traditional Knowledge', 11 *Cardozo Journal of International and Comparative Law* 468-469 (2003).

4 Braun and Pugatch provide a quantitative description of the staggering sales of the pharmaceutical industry and knowing the figure can help one understand how, comprising 25 per cent of the sources of global pharmaceutical products, TMK is such a rich asset. J. con Braun and M. P. Pugatch, 'The Changing Face of the Pharmaceutical Industry and Intellectual Property Rights', 8(5) *The Journal of World Intellectual Property* 599 (2005).

5 See, e.g., Decisions III/14, IV/9, V/16, VI/10 and VII/16, VII/19, VII/29 of the Conference of Parties of the CBD in the *Handbook of the Convention on Biological Diversity Including its Cartagena Protocol on Biodiversity* (Montreal: CBD Secretariat, 3rd ed., 2005).

ground on which such exploitation has to be based and intellectual property stands out as the prime candidate. A number of proposals have been presented in organisations like WIPO and WTO to decide whether the exploitation of traditional knowledge has to be based on the conventional intellectual property rights (patent, copyright, trademark etc) or a new protection scheme (*sui generis*) should be developed for traditional knowledge.

1.3 International Efforts on Traditional Medicine

It may be stated at the outset that traditional medicine has not yet become a specific subject singled out for comprehensive discussion or regulation at the international level. In most of the relevant international organisations (the WTO, WIPO, the CBD Secretariat, WHO etc), traditional medicine is swallowed in the broad discussions and developments related to traditional knowledge or health. The perspectives from which various international organisations have discussed traditional medicine/traditional knowledge will, however, help any national TMK instrument, such as the one advocated for by this article for Eritrea, maintain a balance among the various interests represented in TMK – hence the brief discussion below.

At the CBD level, for instance, the CBD Secretariat has developed what are termed Bonn Guidelines⁶ for further implementation of the access and benefit-sharing principle contained in the CBD. The pertinent CBD provisions on traditional knowledge provide that all undertakings related to the conservation and sustainable development of traditional knowledge should involve indigenous and local communities⁷ and the Bonn Guidelines

expound on this principle.⁸ However, the task of providing for an international regime for traditional knowledge has convinced the Conference of Parties (COP) of the CBD to recommend, in 1999, the establishment of a working group on CBD Article 8(j) and related provisions.⁹ The group has been very active in inviting representatives of local and indigenous communities in its meetings and integrating their ideas in its decision making.¹⁰ The COP has also requested the Ad Hoc Working Group on Access and Benefit-sharing to elaborate, with the collaboration of the Article 8(j) Working Group, an access and benefit-sharing regime for genetic resources in order to effectively implement Articles 15 and 8(j) and the three objectives of the convention (conservation, use and sharing of genetic resources).¹¹

A relevant effort at the WTO has been the search for a convenient intellectual property right by which traditional knowledge may be protected.¹² With such assimilation proving difficult,¹³ a *sui generis* system of protection has been proposed for protecting traditional knowledge within the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) regime.¹⁴ The on-going

6 See Decision VI/24 the Conference of Parties of the CBD, in *Handbook of the Convention on Biological Diversity Including its Cartagena Protocol on Biodiversity*, *id.* at 889-905.

7 See, e.g., Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, 31 *Int'l Leg. Mat.* 818 (1992) Preamble; Arts. 8(j), 10(c) and 15(7).

8 Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization, adopted by the Conference of Parties to the CBD in its sixth meeting held in the Hague on 7-19 April 2002 (CoP Decision VI/24). Paras. 11(j), 16-21, 30-31 and 48.

9 See Handbook of the Convention on Biological Diversity, note 6 above at 139, 520-521. For reports on the successive meetings of the Working Group and relevant actions of the COR regarding Article 8(j), see Decisions III/4, IV/9, V/16, VI/10, VII/16 of the COP in Handbook of the Convention on Biological Diversity, note 6 above.

10 *Id.*, Decision IV/9(2).

11 *Id.*, Decision VII/19(D)(1), 1210.

12 See WTO Secretariat, *The Protection of Traditional Knowledge and Folklore: Summary of Issues Raised and Points Made* (Geneva: WTO, Doc. IP/C/W/370/Rev.1, 2006).

13 D.J. Gervais, 'Traditional Knowledge & Intellectual Property: a TRIPS Compatible Approach', *Michigan State Law Review* 140-141, 149-156 and 158 (2005) and S. Ragavan, 'Protection of Traditional Knowledge', 2 (2) *Minnesota Intellectual Property Law Review* 13 (2001).

14 See WTO Secretariat, note 12 above at 16-17; Ragavan, *id.* at 25-27 and Gervais, *id.* at 151-156, 158 and 161-163.

discussion on the relationship between the environmental (that is, CBD) and trade (that is, TRIPS) aspects of traditional knowledge, for which a number of submissions have been made,¹⁵ is another relevant development in the WTO.

The WIPO may be identified as the international organisation better suited for leading the effort on developing traditional knowledge.¹⁶ To that end, the WIPO created, in 2000, an Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional knowledge and Folklore (IGC).¹⁷ The IGC has had numerous sessions and has produced significant number of documents related to traditional knowledge and folklore.

Specific to the development of traditional medicine has been the work of the WHO. Following the issuance in 2004 of the WHO Medicines Strategy,¹⁸ the WHO released the 2002-2005 traditional medicine Strategy. The traditional medicine Strategy

notes the increase in the number of countries regulating herbal medicines¹⁹ while lamenting at the relatively fewer number of countries with policies on traditional medicine. The traditional medicine Strategy also identifies the challenges in introducing a traditional medicine strategy in Members.²⁰ The document then moves to elaborating the key needs for implementation of the four elements of the Strategy²¹ and ends up with identifying the components, expected outcomes and success indicators for each element of the Strategy.²²

In order to implement the traditional medicine Strategy, the WHO has, *inter alia*:

- been assisting Members to develop national traditional medicine strategies and legislations;²³
- established a Collaborating Centre for traditional medicine at the pharmacy college at the University of Illinois;²⁴
- prepared three volumes of monographs on selected medicinal plants;²⁵
- been assisting countries to conduct research on and enhance their traditional medicine potentials; and²⁶
- produced other key documents related to traditional medicine.²⁷

15 See, e.g., Taking Forward the Review of Article 27.3(B) of the Trips Agreement Secretariat (Joint Communication from the African Group), WTO Doc. No. IP/C/W/404 (2003); WTO Secretariat, note 12 above at 3; The Relationship between the Trips Agreement and the Convention on Biological Diversity and the Protection of Traditional Knowledge (Submission by Bolivia, Brazil, Cuba, Dominican Republic, Ecuador, India, Peru, Thailand, Venezuela), WTO Doc. No. IP/C/W/403 (2003) and Review of Article 27.3(B) of the TRIPS Agreement, and the Relationship between the TRIPS Agreement and the Convention on Biological Diversity (CBD) and the Protection of Traditional Knowledge and Folklore, WTO Document IP/C/W/383 (2002).

16 See WIPO, Certain Decisions of the Seventh Meeting of the Conference of the Parties to the Convention on Biological Diversity Concerning Access to Genetic Resources and Benefit-Sharing, Doc. No. WIPO/GRTKF/IC/6/11 (2004), at 2-3; The Protection of Traditional Knowledge and Folklore, Summary of Issues Raised and Points Made, WTO Doc. No. IP/C/W/370/Rev.1 (2006), at 6-7.

17 See WIPO, Matters Concerning Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Doc. No. WO/GA/26/6 (2000) at 5-7.

18 See World Health Organization, WHO Medicines Strategy: Countries at Core (2004-2007) (Geneva: WHO, 2004).

19 See World Health Organization, note 1 above at 13, 15.

20 *Id.* at 20.

21 *Id.* at 21-26.

22 See World Health Organization, note 18 above at 48-54.

23 See World Health Organization, note 1 above at 29.

24 *Id.* at 34.

25 See WHO, WHO Monographs on Selected Medicinal Plants (Geneva: WHO, Volume 1, 1999), available at <http://www.who.int/medicinedocs/pdf/s2200e/s2200e.pdf>; Volume 2, available at <http://www.who.int/medicinedocs/pdf/s4927e/s4927e.pdf> and Volume 3, available at <http://www.who.int/medicinedocs/index/assoc/s14213e/s14213e.pdf>.

26 See World Health Organization, note 1 above at 32.

27 *Id.* at 51-53.

2

TMK IN THE ERITREAN DOMAIN

2.1 Recognition of Traditional Medicinal Knowledge in Eritrea

Eritrea is blessed with marine and terrestrial biodiversity and its accession to the CBD on 21 March 1996 is evidence to its government's desire to preserve and develop its biodiversity. The Department of Environment²⁸ of the Ministry of Land, Water and Environment is the government entity responsible for overseeing Eritrea's implementation of international environmental instruments. The Department of Environment, in turn, has established an office for specifically following up the CBD. As part of its obligations to implement the CBD, particularly Articles 6, 7 and 26 thereof, the Government of Eritrea has, *inter alia*, prepared the following documents: the National Biodiversity Strategy and Action Plan for Eritrea; the Eritrea Biodiversity Economic Assessment; the Assessment of the National Policy, Legislative and Institutional Framework in View of Environmental Protection and Biodiversity Conservation (part of the National Biodiversity Strategy and Action Plan for Eritrea); the National Biosafety Framework; an Eritrean Biodiversity Stocktaking Report and a CBD Handbook.

In the National Biodiversity Strategy and Action Plan for Eritrea, Eritrean biodiversity has been divided into three principal components: terrestrial, marine and agricultural biodiversities. For each of these three components, the National Biodiversity Strategy and Action Plan for Eritrea analyses issues related to integrated management, sustainable use of natural resources, alien species, pollution management, *in-situ* and *ex-situ* conservation, taxonomic knowledge, information acquisition and storage, public awareness and education, legal and institutional structure (legislation and capacity building).

The Eritrea Biodiversity Economic Assessment, which builds upon the National Biodiversity Strategy and Action Plan for Eritrea, makes economic analysis and valuation of Eritrea's biodiversity emphasizing on agricultural production, coastal and marine biological resources utilisation, forest products utilisation etc.

Visibly underemphasized, or absent in some these documents, however, is the preservation of traditional knowledge of the Eritrean community. It may, thus, be stated that these CBD implementation documents should have integrated the preservation of Eritrean traditional knowledge either as a fourth and separate biodiversity or as part of each of the three sets of biodiversity. Not keeping traditional knowledge in these documents may be due to the apparent categorisation of Eritrean biodiversity based on a non-human, location-based criterion (that is, terrestrial, marine, agricultural).

2.2 Traditional Medicinal Use in Eritrea

2.2.1 Practices and Practitioners

Traditional medicinal use in Eritrea takes no exception in its originality, anthropological foundation and widespread coverage as in other countries with rich traditional medicinal practices. Scientific records exist on traditional healing techniques for such ailments as diabetes, malaria, snakebite, sores, night blindness, anaemia, ascariasis etc.²⁹ Eritrean TMK has not been the subject of a comprehensive study despite some efforts exerted in gathering basic information. The MPDDRC has gathered, conducted and prepared a reliable and initial survey on the number of traditional healers (on gender basis), the types of ailments cured by the healers and sixteen types of traditional medicinal practices (See Table 1).

²⁸ The Department of Environment is a 1997 reformulation of what was formerly known as the Eritrean Environmental Agency.

²⁹ Culture and Health in Eritrea, A Research Project of the Eritrean Public Health Programme, Report No. 1 (History of the Project and Preliminary Findings, (September 1993), 14-17.

TRADITIONAL MEDICAL PRACTICE	Number of traditional medical practitioners in each of the six administrative regions in Eritrea (gender-based)														
	ANSEBA		DEBUB		DEBUBAWI QEIH BAHRI		SEMIENAWI QEIH BAHRI		MAEKEL		GASH BARKA		TOTAL		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Massage	9	0	15	3	19	12	15	1	5	1	7	2	70	19	
Bone setting	61	1	168	9	59	5	77	4	33	3	95	8	493	30	
Cupping	26	0	149	15	38	8	34	6	13	4	67	7	327	40	
Circumcision (female)	18	43	42	120	2	59	15	56	10	28	19	52	106	358	
Circumcision (male)	79	9	188	71	57	4	121	8	27	20	124	33	596	145	
Use of medicinal plants to treat various ailments	32	2	131	42	46	7	44	8	12	7	76	25	341	91	
Hydro-healing	8	0	11	1	10	1	25	1	4	0	18	6	76	9	
Magic	29	1	27	14	0	10	30	1	13	9	38	17	137	52	
Treatment of animal bite	0	0	13	3	18	0	10	0	5	1	12	6	58	10	
Treatment of skin problems	15	3	34	8	19	3	23	2	13	10	20	7	124	33	
Spiritual healing techniques	8	0	42	5	18	5	38	1	13	0	20	7	139	18	
Treatment of snake bite	27	1	84	28	34	1	33	2	7	0	42	17	227	49	
Traditional birth attendants	37	69	49	130	12	121	14	91	8	99	62	132	182	642	
Thermal-healing	9	1	19	1	8	3	22	27	3	3	29	11	90	46	
Tooth Extraction	3	2	40	3	15	3	17	0	8	3	5	10	88	21	
Uvlectomy	34	0	83	15	25	0	71	2	13	2	71	3	297	22	
TOTAL	395	132	1095	468	380	242	589	210	187	190	705	343	3351	1585	4836*

Table 1. Total number of traditional healers per region, per gender, per traditional medical practice in the six administrative regions in Eritrea (Courtesy, Dr. Bereket Tewelde, Senior Researcher, MPDDRC).

* The exact number of traditional medical practitioners in Eritrea as surveyed by the MPDDRC is 3981. The total number added to 4836 is attributed to the fact that some of the traditional healers are engaged in more than one practice – thus, they are numbered in different columns in the table. Dr. Tewelde, *supra* note 154.

The survey states that there are more than 3900 traditional medical practitioners in Eritrea and when compared to around 120 certified, professional medical doctors (a near ratio of 40:1).³⁰ Not included in the survey is the number of people who, without seeing traditional healers, administer traditional medicine on themselves and their family members.

2.2.2 Eritrean Medicinal Plants and ongoing Efforts to List Them

Substantial amount of TMK in Eritrea is based on the use of medicinal plants. No comprehensive

datum exists on the number and types of medicinal plants used for traditional medicine in the whole of Eritrea. One of the major efforts of the MPDDRC has been to prepare a database for Eritrean medicinal plants. A database prepared for 165 medicinal plants used in select districts in the Eritrean highland is available, however. It has a list of 100 medicinal plants gathered only from the vicinities of one village in the highlands of Eritrea (Table 2) and another 65 plants were added later on by the MPDDRC (Table 3). Another list of medicinal plants which grow around two villages in the eastern escarpments of Eritrea is also available (Table 4).

No.	Botanical name	Family name	Local name	Part(s) used	Ailment(s) traditionally treated with the medicinal plant
1.	<i>Barleria eranthemoides</i>	<i>Acanthaceae</i>	<i>Esbok zb'i</i>	Leaves	tonsillitis, eye disease, eczema
2.	<i>Justicia schimperiana</i>	<i>Acanthaceae</i>	<i>Su'da/ sm'eza</i>	Leaves	'gerefta' (viral infection), arthritis/rheumatism
3.	<i>Allium cepa</i>	<i>Alliaceae</i>	<i>Shgurti qeib</i>	Bulb	pulmonary tuberculosis, infectious hepatitis
4.	<i>Allium sativum</i>	<i>Alliaceae</i>	<i>Shgurti tsaeda</i>	Bulb	hypertension, cold, malaria, alopecia, myalgia
5.	<i>Achyranthes aspera</i>	<i>Amaranthaceae</i>	<i>mechelo</i>	Leaves	tonsillitis, choilynichitis, 'nay laeli'
6.	<i>Aerva lanata</i>	<i>Amaranthaceae</i>	—	Stem	'gonfi' (febrile disease)
7.	<i>Schinus molle</i>	<i>Anacardiaceae</i>	<i>Berberet selim</i>	Leaves	abdominal pain, 'nay laeli', diarrhea, anti-emetic, dyspepsia
8.	<i>Carissa edulis</i>	<i>Apocynaceae</i>	<i>Agam</i>	Root bark, stem	spleen enlargement, gynecological problems, malaria
9.	<i>Calotropis procera</i>	<i>Asclepiadaceae</i>	<i>Ghinde'e</i>	Leaves, stem	anti-pruritic, cutaneous leishmaniasis, wounds, abscess/swelling
10.	<i>Balanites aegyptica</i>	<i>Balanitaceae</i>	<i>Meqi'e</i>	Fruit	purgative, enlargement of spleen,
11.	<i>Brassica oleracea</i>	<i>Brassicaceae</i>	<i>Kawlo</i>	Leaves	gastritis, hemorrhoids, bronchial asthma
12.	<i>Lepidium sativum</i>	<i>Brassicaceae</i>	<i>Shnfa'e</i>	Seeds	eye disease, taenia capitis, malaria, tuberculosis, hepatitis, hypertension, warts, anti-emetic
13.	<i>Cordia abyssinica/africana</i>	<i>Boraginaceae</i>	<i>Awhi</i>	Fruit	abdominal pain, eczema
14.	<i>Cynoglossum lanceolatum</i>	<i>Boraginaceae</i>	<i>Tegteg</i>	Leaves	eye disease, choilynichitis

30 Interview with Dr. Bereket Tewelde, Head and Senior Researcher, MPDDRC, 5 July 2008.

Legislative Regulation of Traditional Medicinal Knowledge in Eritrea

15.	<i>Heliotropium cinerascens</i>	Boraginaceae	<i>Am'am gemel</i>	Leaves	taenia capitis, ringworm, abscess, infected wounds
16.	<i>Commiphora erythraea</i>	Burseraceae	<i>Anqua</i>	Resin	infected wounds
17.	<i>Opuntia ficus indica</i>	Cactaceae	<i>Beles</i>	Flowers, stem	diuretic, abscess
18.	<i>Cannabis sativa</i>	Cannabaceae	<i>Etse fars</i>	Flowers,	bronchial asthma, 'segri'
19.	<i>Boscia angustifolia</i>	Capparidaceae	<i>Kermed</i>	Root, stem, bark	snakebite, abscess, chronic ulcer, 'segri', gouty arthritis
20.	<i>Boscia salicifolia</i>	Capparidaceae	<i>Oba</i>	Leaves	choilynichitis
21.	<i>Cadaba farinose</i>	Capparidaceae	<i>Tbishnay</i>	Leaves	facial nerve paralysis, paralysis, migraine, abscess, anti-pruritic, arthritis/rheumatism
22.	<i>Capparis tomentosa</i>	Capparidaceae	<i>Andiel</i>	Leaves	'nay laeli'
23.	<i>Carica papaya</i>	Caricaceae	<i>Papayo</i>	Seeds, root	amoebicide, diabetes mellitus
24.	<i>Pollichia campestris</i>	Carryophyllaceae	—	Plant, root, leaves	eye disease, tonsillitis, snakebites
25.	<i>Silene macroselen</i>	Carryophyllaceae	<i>Sa'ero sa'ero</i>	Plant	segri, gerefta (viral infection), 'gonfi'
26.	<i>Maytenus senegalensis</i>	Celastraceae	<i>Argudi</i>	Stem	arthritis
27.	<i>Chenopodium album</i>	Chenopodiaceae	<i>Moqmoqo</i>	Leaves	wounds, choilynichitis, boils
28.	<i>Terminalia brownii</i>	Combretaceae	<i>Weiba</i>	Bark	infectious hepatitis, malaria, abdominal pain, burns, gynecological problems
29.	<i>Conyza bonariensis</i>	Asteraceae	—	Leaves	amoebiasis, arthritis/rheumatism
30.	<i>Xanthium strumarium</i>	Asteraceae	—	Leaves	taenia versicularis
31.	<i>Vernonia shimperi</i>	Asteraceae	<i>Sghomo</i>	Stem	segri, anti-pruritic
32.	<i>Vernonia amygdalina</i>	Asteraceae	<i>Grawa</i>	Leaves	analgesic
33.	<i>Zehneria scarab</i>	Cucurbitaceae	<i>Hareg riesa</i>	Leaves	eye disease, 'gonfi'
34.	<i>Cucurbita pepo</i>	Cucurbitaceae	<i>Duba</i>	Seeds	taeniicide
35.	<i>Cucumis figarei</i>	Cucurbitaceae	<i>Hafafle</i>	Root	abdominal pain, , diarrhea
36.	<i>Euclea schimperi</i>	Ebenaceae	<i>Kli'aw</i>	Root bark, stem, leaves	malaria, purgative, gynecological problems, 'segri', abscess
37.	<i>Clusia abyssinica</i>	Euphorbiaceae	<i>Etan belalito</i>	Leaves	gastritis, hypertension
38.	<i>Euphorbia prostrata</i>	Euphorbiaceae	<i>Tseba dmu</i>	Latex	warts
39.	<i>Euphorbia tirucalli</i>	Euphorbiaceae	<i>Qnchbi</i>	Latex	taenia versicularis, warts
40.	<i>Ricinus communis</i>	Euphorbiaceae	<i>Gul'i</i>	Leaves	taenia capitis
41.	<i>Leucas martinicensis</i>	Lamiaceae	<i>Tekbetater</i>	Plant, stem, leaves	'gonfi', 'gerefta', malaria, arthritis, worm-expellant
42.	<i>Meriandra bengalensis</i>	Lamiaceae	<i>Mezaguf/nbba</i>	Leaves	hypertension, infectious hepatitis, malaria, gastritis, bronchial asthma, diabetes mellitus, kidney stones, anti-emetic, purgative
43.	<i>Ocimum hadiense</i>	Lamiaceae	<i>Chomer</i>	Leaves, seeds	malaria, eye disease

44.	<i>Otostegia fruticosa</i>	Lamiaceae	Fesi badima	Stem, leaves	arthritis, tonsillitis, gynecological problems
45.	<i>Otostegia integrifolia</i>	Lamiaceae	Ch'endog	Leaves	tonsillitis, uvulitis, hypertension, insecticides
46.	<i>Acacia etbaica</i>	Fabaceae	Seraw	Stem, leaves	taenia capitis, gynecological problems, ringworm, infected wounds, antacid
47.	<i>Acacia sieberiana</i>	Fabaceae	Ch'are	Root	abdominal pain
48.	<i>Albizia antbelmintbica</i>	Fabaceae	Msená	Bark	worm-expellant, diarrhea, infected wounds, burns
49.	<i>Cassia senna</i>	Fabaceae	Sono	Leaves	purgative, worm-expellant, gouty arthritis, anti-emetic
50.	<i>Cassia singueana</i>	Fabaceae	Hambo-hambo	Bark	abdominal cramp
51.	<i>Dichrostachys cinerea</i>	Fabaceae	Ghonoq	Leaves	choilynichitis
52.	<i>Tamarindus indica</i>	Fabaceae	Humer	Fruit	gouty arthritis, anti-emetic, purgative, facial nerve paralysis
53.	<i>Trigonella foenum graecum</i>	Fabaceae	Aba'eke	Seeds	taenia capitis, boils, malaria, chronic liver disease, appetizer, abdominal pain, diarrhea, diuretic
54.	<i>Aloe camperi</i>	Liliaceae	Sanda 'ere	Leaves	malaria, abdominal pain, taeniace, infectious hepatitis, diabetes mellitus, hypertension, anti-emetic, infected wounds
55.	<i>Dracaena schizantha</i>	Liliaceae	Trmo iqqa	Leaves	ear ache, chronic ulcer
56.	<i>Kniphofia isoetifolia</i>	Liliaceae	Shgurti zb'i	Tuber	abscess, 'segri'
57.	<i>Linum usitatissimum</i>	Linaceae	Entati'e	Seeds	sprain, amoebicide, gastritis, myalgia
58.	<i>Buddleia polystachya</i>	Loganiaceae	Metere	Stem	'segri'
59.	<i>Lawsonia inermis</i>	Lythraceae	Hinna	Leaves	choilynichitis, abscess, arthritis
60.	<i>Azadirachta indica</i>	Meliaceae	Neem	Leaves, fruit	insecticide, malaria
61.	<i>Ficus carica</i>	Moraceae	—	Latex	alopecia, eczema
62.	<i>Embelia schimperi</i>	Myrsinaceae	Enkoko	Fruit	taeniace
63.	<i>Eucalyptus globules</i>	Myrtaceae	Tsaeda qelamitos	Leaves	'gonfi', 'gerefta', diabetes m., bronchial asthma
64.	<i>Ximenia americana</i>	Oleaceae	Ml'o	Leaves	tonsillitis
65.	<i>Olea africana</i>	Oleaceae	Awli'e	Leaves	analgesic, spleen enlargement
66.	<i>Hypbaene tbeaica</i>	Palmae	Arkobkobay	Fruit	gastritis, insecticide
67.	<i>Phoenix dactilifera</i>	Palmae	Temri	Fruit, seeds	diarrhea, burns
68.	<i>Phytolacca dodecandra</i>	Phytolacaceae	Sbhti	Leaves, fruit	wounds, chronic ulcer, scabies
69.	<i>Pittosporium viridifolium</i>	Pittosporaceae	Beso atal	Leaves	choilynichitis
70.	<i>Plantago lanceolata</i>	Plantaginaceae	—	Leaves	infected wounds, ringworm

Legislative Regulation of Traditional Medicinal Knowledge in Eritrea

71.	<i>Plumbago zeylanica</i>	Plumbaginaceae	<i>Aftub</i>	Root, stem, leaves	abdominal pain, 'gonfi', scabies, 'gerefta'
72.	<i>Sorghum vulgare</i>	Poaceae	<i>Mesbela</i>	Seeds	sprain, facial nerve paralysis
73.	<i>Zea mays</i>	Poaceae	<i>Efun</i>	'silk'	diuretic
74.	<i>Rumex abyssinicus</i>	Polygonaceae	<i>Muqmuqo</i>	Root	constipation, 'menshiro', anemia, diuretic
75.	<i>Rumex nervosus</i>	Polygonaceae	<i>Hibot</i>	Leaves, stem	eye disease, taenia capitis, haemorrhoids, infected wounds, arthritis, eczema, abscess, gynecological
76.	<i>Clematis simensis</i>	Ranunculaceae	<i>Qemida</i>	Leaves	cutaneous leishmaniasis
77.	<i>Nigella sativa</i>	Ranunculaceae	<i>Abosoda</i>	Seeds	bronchial asthma, diuretic, diarrhea
78.	<i>Rhamnus prinoides</i>	Rhamnaceae	<i>Giesso</i>	Leaves, seed	uvulitis, tonsillitis, taenia versicularis
79.	<i>Ziziphus spina-cristi</i>	Rhamnaceae	<i>Gaba</i>	Leaves	dandruff, taenia capitis, migraine
80.	<i>Prunus persica</i>	Rosaceae	<i>Kukb</i>	Leaves	tonsillitis, 'nay laeli'
81.	<i>Coffea sps</i>	Rubiaceae	<i>Bun</i>	Seeds	burns, infected wounds, cutaneous leishmaniasis
82.	<i>Citrus aurantifolia</i>	Rutaceae	<i>Lemin</i>	Fruit	choilynichitis, tonsillitis, diarrhea, gastritis
83.	<i>Ruta chalepensis</i>	Rutaceae	<i>Chenna adam</i>	Leaves	myalgia, cold, whooping cough, abdominal pain, anti-emetic
84.	<i>Dodonaea angustifolia</i>	Sapindaceae	<i>Tabses</i>	Leaves	arthritis, abdominal pain, cutaneous leishmaniasis
85.	<i>Dodonaea viscosa</i>	Sapindaceae	<i>Tabses</i>	Stem	gynecological problems, arthritis
86.	<i>Pappia capensis</i>	Sapindaceae	<i>Argagud</i>	Stem, leaves	gynecological problems, arthritis
87.	<i>Verbascum sinaiticum</i>	Scrophulariaceae	<i>Zengi adgi</i>	Leaves, stem	burns, 'gerefta', gynecological problems
88.	<i>Datura stramonium</i>	Solanaceae	<i>Mezerba'e</i>	Seeds, leaves	taenia capitis, burns, tooth ache
89.	<i>Lycopersicon esculantum</i>	Solanaceae	<i>Komidere</i>	Leaves	infected wounds, burns
90.	<i>Nicotiana tabacum</i>	Solanaceae	<i>Tmbako</i>	Leaves	snakebite, tooth ache
91.	<i>Solanum incanum</i>	Solanaceae	<i>Engulle/Sengol</i>	Root	snakebite, abdominal pain, i. wounds, chronic ulcer
92.	<i>Solanum nigrum</i>	Solanaceae	<i>Maere mtsu</i>	Leaves, root	'menshiro', arthritis, snakebite, choilynichitis
93.	<i>Solanum tuberosum</i>	Solanaceae	<i>Dnsb</i>	Tuber	burns
94.	<i>Withania somnifera</i>	Solanaceae	<i>Agol</i>	Root, leaves, plant	taenia capitis, arthritis, i. wound, 'gerefta', 'gonfi', sprain
95.	<i>Grewia bicolor</i>	Tiliaceae	<i>Haben</i>	Leaves	burns
96.	<i>Anethum graveolens</i>	Umbelliferae	<i>Sblan</i>	Leaves	diuretic
97.	<i>Steganotaenia araliacea</i>	Umbelliferae	<i>Mewets denagl</i>	Stem, root, leaves	arthritis, chronic ulcer, snakebite, gynecological problem
98.	<i>Cyphostema niveum</i>	Vitaceae	—	Root	snakebite

99.	<i>Vitis vinifera</i>	Vitaceae	Weyni	Leaves	'nay laeli'
100.	<i>Zingiber officinale</i>	Zingiberaceae	Znjbl	Root	tonsillitis, diuretic, diarrhea, cold

Table 2. Shushan Ghirmai, *Traditional Use of Traditional Medicinal Plants in the Highland Region of Eritrea, M. Sc. Thesis, unpublished, Agricultural University of Norway, 2002* (Courtesy, Dr. Bereket Tewelde, Senior Researcher, MPDDRC). *Trees and shrubs threatened with extinction and requiring special attention pursuant to Proclamation 155/2006 - the Forestry and Wildlife Conservation and Development Proclamation – are typed in bold format.*

No.	Botanical name	Family name	Local name	Ailment(s) traditionally treated with the medicinal plant
1.	<i>Rosa abyssinica</i>	Rosaceae	Qolodashm	Anti-tapeworm
2.	<i>Heteromorpha trifoliata</i>	Apiaceae	Mrkus zb'i	Crying eye
3.	<i>Stereospermum kuntbianum</i>	Bignomiaceae	Argzana	Anti-helminthic
4.	<i>Flueggla virosa</i>	Euphorbiaceae	Harmazo	Anti-diarrheal
5.	<i>Juniperus prosera</i>	Cupressaceae	Tshdi	Laxative
6.	<i>Pterolobium stellatum</i>	Fabaceae	Qontetefe	Eye tonic
7.	<i>Croton macrostychus</i>	Euphorbiaceae	Tambukh	Ascariasis
8.	<i>Commicarpus pedunculatus</i>	Nyctaginaceae	Ezni ta'ewa	Scorpion bite
9.	<i>Alisicarpus glumeceus</i>	-	Tsa'eda tenag	Foreign body remover
10.	<i>Tragia pungent</i>	Euphorbiaceae	Am'e	Fellon treatment
11.	<i>Psiada pancualata</i>	Asteraceae	Tsebay ferbet	'gonfi' treatment
12.	<i>Argemone mexicana</i>	Papaveraceae	Esbok mergem	Antiseptic
13.	<i>Cichorium endiva</i>	Asteraceae	Shkorya	Anti-diabetic
14.	<i>Citrus paradisi</i>	Rutaceae	Narge	Anti-scorbutic
15.	<i>Clematis hirstua</i>	Ranunculaceae	Qemida	Anti-gout
16.	Not yet identified	-	Mechicho	Laxative
17.	Not yet identified	-	Etse mesqel	'gonfi'
18.	<i>Sida schimeriana</i>	Malvaceae	Tefrerya	Anti-cancer
19.	<i>Malwa parviflora</i>	Malvaceae	Lhtit	Antiseptic
20.	Not yet identified	-	Kakma	Vitiligo
21.	<i>Agave sisalana</i>	Agavaceae	Iqqa	Ottis media
22.	<i>Adansonia digitata</i>	Bombacaceae	Duma	Anti-abortion
23.	<i>Calprunia aurea</i>	Fabaceae	Htsawts	Antisnake
24.	<i>Thymus serrulatus</i>	Lamiaceae	Teni	Abdominal cramps
25.	<i>Brassica nigra</i>	Brassicaceae	Adri	Antifungal
26.	<i>Cicer arietinum</i>	Fabaceae	Ater	Antimalarial
27.	<i>Rosmarinus officinalis</i>	Lamiaceae	Rozmarino	Anti-hypertensive
28.	<i>Chrysanthemum</i>	Asteraceae	Margareta	Toothache
29.	<i>Mentha piperita</i>	Lamiaceae	Na'ena'e	Anti-hypertensive

30.	<i>Clerodendrum myricoides</i>	Verbenaceae	Sur betri	Anti-migraine
31.	<i>Euphorba aspera</i>	Euphorbiaceae	Kubli guasot	Cramps
32.	<i>Oxalis radicata</i>	Oxalidaceae	Etse si'ol	Kala-azar
33.	<i>Chenopodium murale</i>	Chenopodiaceae	Hamli kubo	Antiseptic
34.	<i>Psidium guajava</i>	Myrtaceae	Zeytun	Anti-diarrheal
35.	<i>Andrachne aspera</i>	Euphorbiaceae	Etse tekeze	Tonsillitis
36.	<i>Atriplex semibaccata</i>	Chenopodiaceae	Enqo enqo	'gonfi'
37.	<i>Becium grandiflorum</i>	Lamiaceae	Tabbeb	Cramps
38.	<i>Hordeum vulgare</i>	Poaceae	Sgem	Stomachache
39.	<i>Myrica salicifolia</i>	Myricaceae	N'ebi	Analgesic
40.	<i>Cissus quadrangularis</i>	Vitaceae	Al'a	Antifungal
41.	<i>Euphorbia nubica</i>	Euphorbiaceae	B'erir aba	Uterine tonic
42.	<i>Polygonum aviculare</i>	Polgomaceae	Afibi	Anti-arthritis
43.	<i>Nicotina glauca</i>	Solanaceae	Asha gereb	Anti-infective
44.	<i>Caralluma speciosa</i>	Asclepiaceae	Ango barmaz	Burns
45.	<i>Coffe arabica</i>	Rubiaceae	Bun	Anti-infective
46.	<i>Ormocarpum pubescence</i>	Fabaceae	Alendia	Anti-inflammatory
47.	<i>Rhus retinobira</i>	Anacardaceae	Teta'ale	Anti-scabies
48.	<i>Leonotis ocyrifolia</i>	Lamiaceae	Tekhetater	Stomachache
49.	<i>Molus sylvestris</i>	Rosaceae	Miele	Anti-amoebic
50.	<i>Eragrostis tef</i>	Poaceae	Thaf	Anti-anemic
51.	<i>Senna alexandria</i>	Fabaceae	Seno	Laxative
52.	<i>Podocarpus latifolius</i>	Podocarpaceae	Zgbbu	Anti-asthmatic
53.	<i>Grewia ferruginea</i>	Tiliaceae	Tsenqua	Anti-helminthic
54.	<i>Jasminium floribundum</i>	Oleaceae	Habbi tselim	Anti-helminthic
55.	<i>Malasia (Hibiscus) spp</i>	-	Kerkede	Anti-anemic
56.	<i>Acacia polyacantha</i>	Fabaceae	Gonerro	Anti-rheumatic
57.	<i>Maytenus undata</i>	Celasteraceae	At'at	Arthritis
58.	<i>Albiza amaara</i>	Fabaceae	Chgonno	Anti-lice
59.	<i>Lannea fructifera</i>	Anacardiaceae	Dugdugugna	Antiseptic
60.	<i>Ficus sycomorus</i>	Moraceae	Sagla	Anti-dysenteric
61.	<i>Avicenia marina</i>	Avicenniaceae	Shewra	Anti-snakebite
62.	<i>Brucea antidysentria</i>	Simaroubaceae	Andr gubila	Anti-amoebic
63.	<i>Ziziphus abyssinica</i>	Rahmanaceae	Gaba adgi	Common cold
64.	<i>Amaranthus sylvesterius</i>	Amaranthaceae	Brbanyo	Anti-helminthic
65.	<i>Maerua angolensis</i>	-	Keremo	Kidney stone

Table 3. A list of 65 medicinal plants listed by MPDDRC (Courtesy, Dr. Bereket Tewelde, Senior Researcher, MPDDRC). Trees and shrubs threatened with extinction and requiring special attention pursuant to Proclamation 155/2006 - the Forestry and Wildlife Conservation and Development Proclamation - are typed in **bold** format.

No.	Botanical name	Family name	Local name	Part(s) used	Ailment(s) traditionally treated with the medicinal plant
1.	<i>Aloe macrocarpa</i>	<i>Aloaceae</i>	<i>Tsebir</i>	Juiced leaf (half a beaker)	Anti-malarial
2.	<i>Rhus retinorrhoea</i>	<i>Anacardiaceae</i>	<i>Shamut</i>	Leaf (1 bunch)	Vomiting and diarrhea
3.	<i>Olea europaea</i>	<i>Oleaceae</i>	<i>Wegre</i>	Leaf (10-15 leaves)	Tonsillitis
4.	<i>Euclea schimperi</i>	<i>Ebenaceae</i>	<i>Gum</i>	Root (small part)	Inducing fertility
5.	<i>Citrus limon</i>	<i>Rutaceae</i>	<i>Lebun</i>	Leaf (1-4 bunches)	Cough and allergic reaction
6.	<i>Mariandra bengalensis</i>	<i>Lamiaceae</i>	<i>Nibba</i>	Leaf (1 bunch)	Blood pressure
7.	<i>Withania somnifera</i>	<i>Solanaceae</i>	<i>Agol</i>	Leaf (1-3 leaves)	Swellings, new wounds
8.	<i>Ruta chalepnesis</i>	<i>Rutaceae</i>	<i>Tsena-adum</i>	Leaf, stem and seed (1 bunch)	Anti-fever
9.	<i>Vernonia abyssinica</i>	<i>Asteraceae</i>	<i>Segemo</i>	Leaf (3 bunches)	Tonsillitis
10.	<i>Schinus molle</i>	<i>Anacardiaceae</i>	<i>Berbere-tselim</i>	Leaf (1 bunch)	Vomiting, diarrhea
11.	<i>Psiadia punctulate</i>	<i>Asteraceae</i>	<i>Tsehay-ferbet</i>	Leaf and stem (1 bunch)	Anti-abortion
12.	<i>Tamarindus indica</i>	<i>Caesalpiniodeae</i>	<i>Homer</i>	Seed (3-4 seeds)	Repairing bone fracture
13.	<i>Acokanthera schimperi</i>	<i>Apocynaceae</i>	<i>Mebtea</i>	Stem and leaf (3-4 bunches)	Skin irritation
14.	<i>Balanites aegyptiaca</i>	<i>Balanitaceae</i>	<i>Kog</i>	Seed and leaf (2-5 bunches)	Anti-dandruff and skin diseases
15.	<i>Anethum graveolens</i>	<i>Apiaceae</i>	<i>Shilan</i>	Seed (1 spoonful)	Cystitis
16.	<i>Terminalia brownie</i>	<i>Combretaceae</i>	<i>Tsebat</i>	<i>Not shown</i>	<i>Not shown</i>
17.	<i>Leucas martinicensis</i>	<i>Lamiaceae</i>	<i>Tektatir</i>	Stem and leaf (2-3 bunches)	Skin rash
18.	<i>Ziziphus spina-christi</i>	<i>Rhamnaceae</i>	<i>Gaba</i>	Leaf (2-3 bunches)	Anti-dandruff
19.	<i>Ethulia sp.</i>	<i>Rubiaceae</i>	<i>Ketfet-shifa</i>	<i>Not shown</i>	<i>Not shown</i>

Table 4. Tesfalem Rezene, *Traditional Medicinal Plants in the Tigre Ethnic Group of Eritrea (Eastern Escarpment)*, B. Sc. Thesis, unpublished, University of Asmara, 2002) (Courtesy, Dr. Bereket Tewelde, Senior Researcher, MPDDRC)* Trees and shrubs threatened with extinction and requiring special attention pursuant to Proclamation 155/2006 - the Forestry and Wildlife Conservation and Development Proclamation – are typed in **bold** format.

* Please note that some of the plants in this list may be found in the lists provided in Tables 2 and 3 above and that the medicinal use may differ. The author of this list has conducted laboratory results on some of these plants and found anti-bacterial effects thereon. Tesfalem Rezene, *Traditional Medicinal Plants in the Tigre Ethnic Group of Eritrea (Eastern Escarpment)*, B. Sc. Thesis, unpublished, University of Asmara, 2002, at 5, appendices VI-VIII.

The MPDDRC has also been trying to gather scientific research to validate the traditional medicinal use of the plants contained in its list and see if more medicinal application can be made out of the plants. The medicinal use of 87 of these plants has been validated so far.³¹

It should be noted, however, that although the majority of traditional Eritrean medicines are extracted from herbs, there is a widespread practice of using animal parts for various treatments. For example, it is customary to see rhino horns in many Eritrean households for use in treating muscular contraction caused by cold; smoked camel faeces are used for treating haemorrhoids infections and chicken fat for relieving tendons contracted after skin burn by fire. Any legislative step governing traditional medicines should, therefore, consider the use of animal parts and other materials in the defining traditional medicine.

2.3 Policy and Related Efforts thus far Undertaken to Protect/Develop Traditional Medicinal Knowledge

The following sections will show the works of various government agencies and institutions relevant to traditional knowledge/TMK in Eritrea.

2.3.1 Ministry of Health

In August 2006, the Ministry of Health issued the Eritrean National Medicines Policy. The policy is designed to 'serve as framework to coordinate activities in the pharmaceutical sector in Eritrea, which cover the selection, production, importation, supply, storage, distribution and use of medicines'.³²

³¹ *Id.*

³² Eritrean National Medicines Policy, 2007, available at <http://apps.who.int/medicinedocs/documents/s16241e/s16241e.pdf>. The policy defines medicines as [a]ny substances or mixture of substances used in the diagnosis, treatment, mitigation, or prevention of a disease, disorder, abnormal physical state, or the physical symptoms thereof, in man or animal; restoring, correcting, or modifying organic functions in man or animal; or disinfection in premises. The recognition by the policy of traditional medical practice can lead one to conclude that traditional medicines may meet the elements of this definition.

Whereas ensuring the 'availability and accessibility of safe, effective and good quality essential medicines to the whole population and to promote rational medicines use' is the general objective of the policy, one of the policy's objectives is specific to TMK: 'Document and identify the *widely used* traditional practices and traditional medicine in order to establish their safety and efficacy (emphasis added)'.³³

To achieve this traditional medicine-specific objective, the policy calls for the documentation of the practice of traditional medicine in Eritrea and looks for the documentation, registration and controlling of marketed traditional medicines. The policy also states that traditional healers will be encouraged to be organised and a Code of Practice will be developed for them.³⁴

The Department of Regulatory Services of the Ministry of Health has taken the primary responsibility in implementing these policy items regarding traditional medicine. The department, for instance, annually hosts a commemoration for Eritrean traditional medicine during the annual 31 October African Traditional Medicine Day.³⁵ The department has magnified the importance of traditional medicine and in the writings of Mr. Bernando Kifleyesus, Director General of the department:

People are using to attend to these places where they could be treated from their illness traditionally, and nobody could say they ought not to go to those places – because they do have the belief. But I could say that it is time to separate the [chaff from the wheat] and the Ministry of Health

³³ *Id.* at 3.

³⁴ *Id.* at 14-15.

³⁵ Dawit Mehanso, 'Large Number of World Population Still Depends on Traditional Medicine', *Eritrea Profile*, 21 November 2007, page 2. Apart from these activities, however, no other huge commitments have thus far been undertaken in this regard, according to Mr. Zemuy, a pharmacist at the Medicines Control Division of the Department of Regulatory Services (Discussion at his office, 8 July 2008).

should give much concern to the traditional medicine to be studied and to organise the people who are dealing with [it]. Of course if this could be done, *the traditional practitioners will be the backbone of our healthcare system* (emphasis added).³⁶

As the efforts of the department continue, the provisions related to traditional medicine in the Eritrean National Medicines Policy may, nevertheless, be reviewed from two perspectives. Firstly, the background information on the protection and enhancement of traditional knowledge presented in section 1 above has shown that traditional medicine represents a package of various interests. Thus, the policy statements in the policy need to be integrated with or be made part of an overall national traditional medicine policy tying all these interests. Secondly, even if they may be viewed as limited to the medical dimension of traditional medicine, the provisions of the policy related to traditional medicine need to be supplemented with more concepts as reflected in the WHO's traditional medicine Strategy, that is: means of access; standards of quality, efficiency and efficacy; rules for rational use; and extensive research on traditional medicinal practices in Eritrea.

2.3.2 Department of Environment

It has been noted earlier that the Department of Environment has not specifically included the conservation of traditional knowledge in general in the relevant frameworks and national instruments prepared for implementing the CBD. The enhancement of traditional medicine through CBD conservation and development techniques is, therefore, a major gap in the process of developing Eritrea's rich and widely used traditional medicine.

2.3.3 Ministry of Agriculture

The involvement of the Ministry of Agriculture in advancing traditional medicine in Eritrea can only be indirect: protecting, from extinction or

unauthorised cutting or collecting, plants used for traditional medicinal purposes. In 2006, the government enacted Proclamation 155/2006 – the Forestry and Wildlife Conservation and Development Proclamation. Article 19 of the Proclamation prohibits burning, uprooting, tapping, girdling damaging or destroying any tree or shrub. Article 20 adds that no person, unless authorised or permitted by the Minister of Agriculture, may, *inter alia*, cut or collect dead trees or shrubs or parts thereof for commercial purposes, or cut live trees or shrubs or parts thereof for domestic purposes. Thus, trees or shrubs from which traditional medicinal ingredients can be extracted will remain available for the traditional medical practitioners – hence, indirect contribution of the Ministry of Agriculture in advancing traditional medicine. Moreover, Annex 1 of the Proclamation contains a list of 55 trees and shrubs threatened with extinction and requiring special attention. Nearly half of these trees and shrubs are contained in the sample list of medicinal plants provided in Tables 2-4.

2.3.4 Medicinal Plants and Drug Discovery Research Centre

The MPDDRC is basically engaged in scientific research on TMK in Eritrea. As one of its principal commitments, the MPDDRC has been advancing research on TMK in Eritrea and preparing the bioassay and physio-chemical extraction of samples from select medicinal plants. By so doing the MPDDRC gives scientific validation to the medicinal claim of the traditional medical practitioners and if successful, launch further research.³⁷

The effort of the scientists and researchers at the MPDDRC will, given institutional cooperation with concerned government and non-government institutions, be an ineluctable asset to develop any national instrument (policies or legislations) enacted to protect traditional medicine in Eritrea by requiring scientific validation of its medicinal claims.

³⁶ Bernando Kifleyesus, 'Herbs in Traditional Medicine', *Pharma Focus*, 13 August 1994, page 10.

³⁷ The Validation Program of the MPPDRRC focuses on research into the scientific basis of plant-based traditional medicines and their validation; *see also*, Dr. Tewelde, note 30 above.

It should be noted, however, that the work of the MPDDRC has now expanded and its research is not limited to plants only.³⁸

2.4 The Possibility for Protection/Development of Traditional Medicinal Knowledge under Major National Legal Instruments in Eritrea

This section will analyse some of how major Eritrean national legal instruments may be interpreted to protect TMK in Eritrea.

2.4.1 *The Constitution of Eritrea*

The Constitution of Eritrea is the supreme law of the land and the source of laws of the State.³⁹ Article 8(3) of the Constitution reads:

In the interest of present and future generations, the State shall be responsible for managing all land, water, air and natural resources and for ensuring their management in a balanced and sustainable manner; and for creating the right conditions to secure the participation of the people in safeguarding the environment.

Read in light of contemporary environmental law, the phrase ‘all land, water, air and natural resources’ in Article 8(3) may be construed to be referring to Eritrean biodiversity which embraces Eritrean traditional knowledge and TMK. The State, thus, has the obligation to ensure the management of traditional knowledge, inclusive of traditional medicine, in a balanced and sustainable manner and to create conducive environment to secure popular participation in safeguarding it.

Moreover, the Constitution guarantees the right of individuals to be engaged in the practice of traditional medicine. Article 21(3) reads ‘Every citizen shall have the right to participate freely in any economic activity

and to engage in any lawful business’ and pursuant to Article 8(2), the State has an obligation to ‘bring about a balanced and sustainable development throughout the country, and shall use all available means to enable all citizens to improve their livelihood in a sustainable manner, through their participation’. It is also possible that traditional knowledge may be protected as an intellectual property owned by the person(s) who possess the knowledge. The Constitution, in Article 23(1), provides that ‘... any citizen shall have the right, anywhere in Eritrea, to acquire and dispose property, individually or in association with others, and to bequeath the same to his heirs or legatees’ and may, thus, be construed to guarantee holders of specific TMK the right to own the knowledge as property and make use of such knowledge within the limits of the law.

By way of conclusion, we may derive the following statements as the constitutional grounds for any policy or legislations for advancing of TMK in Eritrea:

1. TMK is part of Eritrean biodiversity deserving all protection and development opportunities to be provided by the State to other segments of the biodiversity;
2. Eritrean citizens have the right to be freely engaged in any profession related to the exploitation of TMK in Eritrea;
3. The State has an obligation to create conducive environment for people to sustainably harness the benefits of TMK they possess; and
4. Holders of TMK have, within the limits of the law, full proprietary rights on the knowledge they possess.

2.4.2 *Intellectual Property Laws*

For a young legal system like Eritrea’s, the primary focus on the form of available proprietary protection of TMK is conventional intellectual property; a *sui generis* system of protection can, at the moment, only be theoretical.

It can at the outset be concluded that Eritrea does not have a comprehensive intellectual property law.

³⁸ Dr. Tewelde, note 30 above, personal discussion with the author, 12 July 2008, at the MPDDRC laboratory.
³⁹ Constitution of Eritrea, Article 2(3).

Of conventional intellectual property rights, only copyrights have been relatively regulated as contained in Articles 1647-1674 of the Transitional Civil Code of Eritrea⁴⁰ The other forms of intellectual property rights are either scantily regulated or left for the enactment of special laws or not regulated at all. The following paragraphs will discuss if the scantily existing intellectual property provisions under Eritrean laws may be used to protect TMK.

Patents

The only available reference to the regulation of patents in the major statutes is Article 148 of the Transitional Commercial Code of Eritrea which, in reference to the assets that a business may have, states:

1. A business may consist of patents relating to registered inventions, trade-marks, designs and models.
2. Patents shall be subject to the provisions of special laws.

No special laws have hitherto been enacted regulating patents; thus, protection of TMK through the patent regime is unlikely at the moment.

Goodwill and unfair competition

Articles 130-134 of the Commercial Code regulate the goodwill and unfair competition of businesses. One of the means of protecting the goodwill of the business is for the trader to institute proceedings for unfair competition and claim compensation for harms caused by the unfair competition (Article 131 - 132). Any act of unfair competition leads to a civil case for damages (Article 2057 of the Civil Code) and/or criminal prosecution (Article 673 of the Transitional Penal Code of Eritrea).

The main problem with regulating unfair competition protection under these rules is that they

protect *traders* or *businesses*. The legal norm for entitlement to be a trader or a business is to go through the formal process of registration, licensing, assumption of trade-name, payment of taxes and other activities related to 'commercial' undertaking. In Eritrea, despite elementary efforts by the Department of Regulatory Services of the Ministry of Health to organise practitioners of traditional medicine, the practice of traditional medicine has not reached a level where it is organised in the form of a business or a professional trade. It cannot also be said that there is an element of 'unfair' competition between the practitioners of traditional medicine. MPDDRC records show that practitioners of traditional medicine tend to have 'specialisations' and do not act in a spirit of 'business competition'.

Thus, the statutory provisions available for unfair competition are not a string arm in protecting traditional medical practice in Eritrea.

Copyright

Available material on the protection of traditional knowledge through copyright laws refers mainly to traditional folklore, dancing, art, photography, music etc.⁴¹ Hence, is hard to figure out how traditional medicine may be protected through copyright laws. The only angle from which copyright can protect the practice of traditional medicine in Eritrea is, as has been the practice in Thailand,⁴² through the protection of literary works prepared to record practices, recipes etc of the traditional medicine.

Trademark and Trade Secret

These are two forms of intellectual property rights not yet regulated in Eritrea. As to trademarks, the Commercial Code includes trademarks in the eclectic term 'distinguishing mark'. However, since trademark is conventionally understood to link a certain product (in our case a traditional medicinal

40 The Transitional Civil Code of Eritrea is an amendment to the 1960 Civil Code of Ethiopia adopted with slight amendments after the independence of Eritrea. The Transitional Commercial, Penal, Civil Procedure and Criminal Procedure and Maritime Code are also respective amendments of the earlier Ethiopian Codes. All of these amendments are contained in Vol.1/1991 of the Gazette of Eritrean Laws.

41 See WTO Secretariat, note 12 above at 13-14 and Ragavan, note 13 above at 15-20.

42 See Chapter 2, Section 16 of the Act on Protection and Promotion of Thai Medicinal Intelligence. For English version of the Act, see http://www.wipo.int/export/sites/www/tk/en/laws/pdf/thai_medic.pdf.

product) to a manufacturer,⁴³ application of trademark rules to protect Eritrean traditional medicinal products may prove impractical because the practice of traditional medicine in Eritrea has not reached a level where people manufacture specific traditional medicinal products and sell them to the public at large.

Moreover, the existing relevant laws (Articles 140-141 of the Commercial Code, which regulate distinguishing marks, and Article 674 of the Penal Code, which punishes infringement of marks, declarations of origin, designs or models) assume the trade/business scenario discussed above regarding goodwill and unfair competition making it difficult for practitioners of Eritrean traditional medicine to get a trademark protection.

Trade secret is hailed as 'possibly the best form of protection for the traditional knowledge amongst the prevailing regimes of intellectual property'.⁴⁴ It would best suit Eritrean practitioners of traditional medicine most of whom, owing to the fact that they claim to have acquired their knowledge from their ancestors under a vow to keep the knowledge secret, tend not to divulge their knowledge. As they start to trade their knowledge, trade secret law can be the best form of intellectual property to protect their interests. However, trade secret law has not yet been enacted in Eritrea.

Protection of Eritrean traditional medicine through geographical indications⁴⁵ may be another tool, but no Eritrean law has yet been proclaimed on geographical indications.

2.5 Legal and Institutional Constraints in the Course of Preservation and Sustainable Exploitation of Traditional Medicinal Knowledge in Eritrea

Now that we have seen the available national legal instruments for the protection of traditional

medicine in Eritrea, we will proceed to discussing the general existing legal and institutional constraints that can challenge any effort to sustainably develop traditional medicine in Eritrea.

2.5.1 Absence of a Comprehensive Intellectual Property Law

Any law or policy to be established for protection of Eritrean traditional knowledge/TMK will have to assume the presence of a comprehensive intellectual property law. This is because the ownership of traditional knowledge/TMK in Eritrean may have to be regulated in the form of conventional intellectual property rights. If a comprehensive intellectual property law is not introduced into the Eritrean jural world, Eritrean TMK policy will have to alternatively assume the presence or future enactment of a *sui generis* legislation that recognises and protects the ownership of the TMK and its products.

2.5.2 Apparent or Potential Misunderstanding on Who is Responsible for Regulating Eritrea's Traditional Medicinal Knowledge

We have noted that traditional knowledge/TMK embraces a host of interests and that related international organisations view and try to regulate traditional knowledge/TMK from specific interests that reflect their respective mandates. It was also stated that a comprehensive international regime has not yet been established for traditional knowledge/TMK. The problem is exacerbated when works from these international organisations are brought into the domestic apparatus and are met with the need to knead them together into a system that simultaneously represents all these interests without sacrificing their essence so that commitments to respective international organisations are not compromised.

Eritrea is not an exception to this scenario. Eritrea is a member of or signatory, among others, to the United Nations, WIPO, CBD, WHO, UNESCO, Convention Concerning the Protection of the World Cultural and Natural Heritage, Convention on International Trade in Endangered Species of Wild Fauna and Flora, United Nations Food and Agricultural Organisation and International Treaty

⁴³ See Ragavan, note 13 above at 20.

⁴⁴ *Id.* at 22. Ragavan adds: 'A trade secret can consist of any pattern, device, compilation, method, technique, or process that gives a competitive advantage'.

⁴⁵ For the possibility of protecting traditional knowledge through geographical indications, see WTO Secretariat, note 12 above at 15.

on Plant Genetic Resources for Food and Agriculture. Eritrea's membership/participation in the scores of activities in these organisations relevant to the various elements of TMK has necessarily opened floodgates to scores of doctrines and principles that need to be taken into account in implementing each of the commitments to the respective international organisations as applies to TMK.

The nonexistence of a comprehensive traditional knowledge/TMK at an international level will reflect itself at the national level as the different government organs authorised to implement the respective commitments to various international organisations⁴⁶ try to implement the separate traditional knowledge/TMK commitments. Therefore, in regulating TMK the relevant government organs need to work together to produce a national document harmonising the interests they respectively represent.

So far, only the Ministry of Health seems to have taken an initial step, much less a coordinated effort, to preserve and enhance TMK. At least the three active and directly involved organs, that is, the Ministry of Health (WHO commitments), the Department of Environment (CBD commitments), and the Ministry of Trade and Industry (WIPO commitments) have to yet sit together and dwell on the issue of TMK to coordinate Eritrea's commitments under the respective international instruments on TMK.

2.5.3 Dearth of Human Capital

This is where the equation ends. One needs adequate human supply to meet the insatiable demands of grand a scheme as the protection and development of TMK. Eritrea is a relatively young nation of low population with a very low percentage of educated citizenry. Lack of human capital and the inability to make use of existing human potential are the two recurrent hurdles in the nation-building endeavour.

46 For instance: the Ministry of Health represents Eritrea's WHO commitments; the Ministry of Trade and Industry represents Eritrea's WIPO commitments; the Ministry of Land Water and Environment represents Eritrea's CBD commitments etc.

A mere glance at the number of Ministries that may need to be involved in this mission and the various interests they represent is enough to appreciate the number and class of people that could be involved in the process. People of varying expertise will be engaged in the numerous activities required for the various levels of accomplishing the mission.

3 TOWARDS BRINGING TRADITIONAL MEDICINAL KNOWLEDGE INTO THE LIGHT

It is to be noted at the outset that Eritrea has an obligation, under the CBD, to establish national implementation tools for the conservation and development of its TMK resources. Added to this is the existing abundance of TMK in Eritrea which demands regulation.

This section will discuss the nature and model of legislation for protection and development of TMK for Eritrea. To suit the analysis for the need and nature of an Eritrean legislation on TMK, let us first discuss the legislative experience of other countries in the realm of TMK.

3.1 Legislative Experiences on Traditional Medicinal Knowledge

Numerous countries and regional organisations have issued legislations regulating TMK. In 2001, the WHO had issued a document presenting the regulatory practice on traditional medicine and complementary and alternative medicine in 123 of its Member States, 191 by then.⁴⁷ WIPO has also gathered laws of some of its Member States governing traditional knowledge in which the

47 WHO, Legal Status of Traditional Medicine and Complementary/Alternative Medicine: A Worldwide Review, (Geneva: WHO, 2001), available at http://whqlibdoc.who.int/hq/2001/WHO_EDM_TRM_2001.2.pdf.

practice of traditional medicine is included.⁴⁸ The analysis in sections 3.1.1 and 3.1.2 is based on said documents from the WHO and WIPO.

3.1.1 Kinds of Legislations

The status of the practice of TMK in countries and regional organisations may be categorised into four types. The first is a group of countries that have legislations specifically devoted to TMK.⁴⁹ The second group is a class of countries which handle the regulation of TMK within the broader scope of public health law or traditional knowledge law.⁵⁰ The third group consists of countries which, while having legislations related to the practice of traditional medicine, heavily restrict the practice in a number of ways. These ways include criminally punishing any non-allopathic treatment, allowing traditional medicinal practice only to a limited category of practitioners (usually traditional birth attendants and/or chiropractors) or practices (for example, acupuncture) and requiring a diploma or a degree for practicing traditional medicine or

complementary/alternative medicine.⁵¹ The fourth group is that of countries which have no official legislative or regulatory texts governing the practice of traditional medicine.⁵²

3.1.2 Substance of the Legislations Specific to Traditional Medicinal Knowledge

The legislations specifically regulating the practice of traditional medicine have a number of similar traits. These traits may be grouped into three clusters: rules relating to the traditional medicines; rules relating to the qualification of the practitioners of traditional medicine; and rules relating to the practice and organisation of the practitioners.

The rules on traditional medicines include those regulating the establishment of national herbaria of traditional medicinal items, the preparation of a traditional medicine pharmacopeia, the verification of toxicity of traditional medicines and their approval for medication, the sale of traditional medicine, the constitution of institutes (either specific on traditional medicine or part of health institutes of broader scope) that register traditional medicines and/or conduct research on traditional medicine as well as train, educate and monitor

48 See Legislative Texts on the Protection of Traditional Knowledge, available at <http://www.wipo.int/tk/en/laws/tk.html>.

49 The following may be listed as examples of countries which, as of 2001, had legislations specifically regulating TMK: Equatorial Guinea, Gambia, Ghana, Guinea, Lesotho, Mauritius, Sierra Leone, Zimbabwe, Bolivia, Brazil, Chile, Panama, Pakistan, Belgium, Hungary, Norway, Bangladesh, Myanmar, Nepal, Sri Lanka, Thailand, Cambodia, China, Philippines and Vietnam. WHO, *Legal Status of Traditional Medicine and Complementary/Alternative Medicine: A Worldwide Review 5-174* (Geneva: WHO, 2001).

50 The following may be listed as examples of countries which, as of 2001, had regulated the practice of TMK in broader legislations governing public health or traditional knowledge: Benin, Burkina Faso, Ethiopia, Malawi, Nigeria, South Africa, Uganda, Tanzania, Jamaica, Guatemala, Peru, Saudi Arabia, Denmark, Russian Federation, India, North Korea, Indonesia, Fiji, Kiribati, New Zealand and South Korea. The African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources of 2000 and the 31 March 2004 Directive of the European Parliament and of the Council (Directive 2004/24/EC) may also be cited. *Id.*

51 The following countries may, according to the nature of their legislations as of 2001, be included in this category: Costa Rica, Venezuela, Cuba, Dominican Republic; Algeria, Democratic Republic of the Congo, Djibouti, Egypt (requires herbal medicines to keep level of pharmaceutical drugs), United Arab Emirates, Austria, Finland, France, Germany, Ireland, Italy, Latvia, Liechtenstein, Luxembourg, Malta, Netherlands, Spain, Sweden, Switzerland, Ukraine, United Kingdom, Australia, Japan, Malaysia, Papua New Guinea and Vanuatu.

In some countries (as of 2001) such as Botswana, Burkina Faso, Congo, Kenya, Senegal, Zambia, Bolivia, Colombia, Solomon Islands, the governments only state that they officially recognize the practice of traditional medicine. See WHO, note 49 above.

52 *Id.* As of 2001, the following countries may be included in this group: Angola, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Côte d'Ivoire, Gabon, Guinea-Bissau, Kenya, Mozambique, Seychelles, Rwanda, Sao Tome and Principe, Ecuador, Sudan, Syria, Liechtenstein, Bhutan, Laos, Mongolia and Samoa.

practitioners of traditional medicine,⁵³ the patenting of traditional medicine and insurance coverage of treatments conducted by traditional medicinal practice.

The rules on the qualification of the practitioners of traditional medicine include those regulating the minimum qualifications to be a practitioner and the training, licensing and registration of the practitioners.

The rules on the practice and organisation of the practitioners include those regulating the limitations of the practice of traditional medicine, code of ethics for and punishing abuses by the practitioners, the possibility of involvement of the practitioners in primary healthcare system and the formation of associations of the practitioners.⁵⁴

For reasons to be detailed in section 3.1.4, the author believes that Eritrea, like the first group of countries mentioned in section 3.1.1, needs legislation specific to TMK. To that end, the legislative experience of Thailand will be analysed along with respective comments on the suitability of adapting the various components of the Thai legislation to a similar Eritrean legislation. The author selected the Thai legislation because of its specificity on traditional medicine, the details of its provisions and also because it contains most of the substances of legislations specific to TMK described in this section.

3.1.3 *The Act on Protection and Promotion of Thai Medicinal Intelligence*

The Act on Protection and Promotion of Thai Medicinal Intelligence, B.E 2542 (hereinafter 'the

Act' or 'Thai Act') regulates the protection and promotion of Thai traditional medicine. The Act is based on the premise that traditional Thai medicinal intelligence should be protected by intellectual property running for a fixed term. The intellectual property protection comprises of two elements: one applying to the formulae of traditional Thai drugs and the other applying to the text on traditional Thai drugs.⁵⁵ The intellectual property is created by registration of the formulae or texts.

Classification of medicinal intelligence

One of the pivotal issues in extending protection to any form of traditional knowledge is the number of people or communities who have knowledge of the matter. Some forms of traditional knowledge, such as traditional medicinal treatment may be known to a single individual only. Other forms of traditional knowledge (for example, a traditional dance, pottery skill or the preparation of a unique gastronomy or alcoholic drink) may be known to a single community or a few communities in one or a few countries.

The Thai Act, accordingly, divides the intellectual property rights on the formulae of or text on traditional Thai drugs into three categories depending on the range of knowledge of the medicinal intelligence, namely:

1. National formula of traditional Thai drugs or national text on traditional Thai medicine. These are not protected by intellectual property because the Minister of Public Health believes that these drugs are of special interest to the public;

⁵³ *Id.* Examples of countries with such institutions include Congo, Mauritius, Mali, Namibia, Nigeria, Sierra Leone, Zimbabwe, Chile, Nicaragua, Peru, Pakistan, Belgium, Sweden, Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, Thailand, China, Japan, South Korea, Singapore and Vietnam.

⁵⁴ *Id.* Ethiopia, Ghana, Mali, Namibia, Sierra Leone, South Africa, Uganda, Zambia, Zimbabwe, Canada, Ecuador, Guatemala, Latvia, Mongolia, Republic of Korea and Vietnam may be cited as examples of countries which had associations of practitioner of traditional medicine as of 2001.

⁵⁵ See Act on Protection and Promotion of Thai Medicinal Intelligence, note 42 above, Section 3 defines 'formula of traditional Thai drugs' as 'formula stated as the production process and ingredients which contain Thai traditional drugs, no matter what form the ingredients are' and 'text on traditional Thai drugs' is defined as 'technical knowledge concerned with traditional Thai medicine which has been written or recorded in Thai books, palm leaf, stone inscription or other materials or that have not been recorded but passed on from generation to generation'.

2. General formula of traditional Thai drugs or general traditional Thai medicine document. These are also not protected by intellectual property because they are widely used as not to be linked to an individual or group of few individuals or because the individual ownership thereon has expired; and
3. Personal formula of traditional Thai drugs or personal text on traditional Thai medicine. These are protected by intellectual property after application by the concerned individuals and final registration of their formulae or texts on traditional Thai medicine. The following persons⁵⁶ are entitled to register a formula or a text as a personal formula of traditional Thai drugs or personal text on traditional Thai medicine:
 - a. the inventor;
 - b. the improver or developer; or
 - c. the inheritor of formula of traditional Thai drugs or personal text on traditional Thai medicine.

An issue that may be raised in light of this classification is the status of the first two classes of formulae or texts. The Act provides intellectual property protection only to personal formulae and texts; i.e., it focuses only on protection of individual medicinal knowledge. However, in light of the growing trend to give protection to collective

traditional knowledge,⁵⁷ the Act should have provided that the government will seek for possible international protection of medicinal knowledge generally or nationally known to the Thai people.

Adaptation for Eritrea of a model of classification similar to the Thai experience is advisable because it helps to identify protectable individual efforts that produce traditional medicine. It also encourages individuals to be creative in discovering or developing new brands of traditional medicines. However, protection needs to be given to the vast quantity of TMK known to the general public, if such knowledge is unique to a given group of communities or the nation at large. An Eritrean legislation needs to provide that communal or national traditional medicinal intelligence unique to Eritrea will be protected.

Intellectual Property?

Although the Act states that traditional Thai medicinal intelligence shall be protected by intellectual property rights, the Act does not refer to a specific form of conventional intellectual property right applicable to the formulae or texts on traditional Thai medicine (for example patent to the former and copyright to the latter). Moreover, the Act does not contain standards that apply for the grant of the intellectual property it gives to medicinal intelligence. In the realm of other intellectual property rights, there are substantive criteria applicable to qualify a given work for the respective intellectual property right. For instance, for an invention to be patentable it has to be new, involve an inventive step (i.e., be non-obvious) and be capable of industrial application

⁵⁶ Although the rights created by the Act are primarily applicable to Thai nationals (Section 21), persons from countries which allow Thai nationals in their territories to have intellectual property protection on Thai traditional medicine shall, based on the principle of reciprocity, and by way also of implementing Article 3 of the TRIPS, have, according to Section 41, the right to seek registration and intellectual property protection under the Act for local traditional medicines in their countries. This is an important principle that must be part of Eritrean TMK legislation.

⁵⁷ For example, Section 34 of the 1997 Republic Act No. 8371, the Indigenous Peoples Rights Acts of the Philippines introduced what are termed community intellectual rights by stating that indigenous peoples are 'entitled to the recognition of the full ownership and control end protection of their cultural and intellectual rights' in areas such as 'traditional medicines and health practices, vital medicinal plants, animals and minerals'. See also the contents of the 1993 Bellagio Declaration in which professionals from around the world, in opposition to the conventional, single-author (inventor) based intellectual protection system prevailing in the world, called for proprietary protection of communal traditional knowledge possibly in the form of neighboring or related rights regimes. See The Bellagio Declaration, 1993, available at <http://www.cwru.edu/affil/sce/BellagioDec.html>.

(i.e., be useful).⁵⁸ Similarly, for a given work to be copyrightable it must be original,⁵⁹ be an expression (not a mere idea, a concept or a theory)⁶⁰ and fixed in a tangible medium of expression.⁶¹ In some jurisdictions the work must, by way of formality, also be notified to the public (registered).⁶²

The Thai Act only provides that a successful applicant (i.e. one who is either of the four types of persons entitled to own a personal formula or text and whose application has not been successfully objected by persons who contest his ownership) is entitled to the rights attached to the intellectual property because of his ownership of the formula or text on traditional Thai medicine.⁶³ The Act does

not provide for substantive tests (such as those mentioned for patent or copyright) to qualify a given formula or text for intellectual property status and this is the single most important weak spot in the Thai Act. The intellectual property right envisaged by the Act is neither conventional intellectual property right nor a fully-fledged *sui generis* system for protection of TMK.⁶⁴ Although the concept of intellectual property protection is an interesting model for the myriad of traditional medicinal intelligences in Eritrea,

Rights Created by Registration

Nevertheless, the Act expressly lists the rights due to the registered intellectual property on the formula or text on traditional Thai medicine. These rights which remain valid during the lifetime of the bearer of registration and fifty years after his death (or in

58 See, e.g., Article 27 of TRIPS and §§ 102 and 103 of the U.S. Patent Act, 35 U.S.C.A.

59 See *Feist Publications v. Rural Telephone Service*, 499 U.S. 340, 111 S.Ct. 1282, 113 L.Ed. 2d. 358.

60 Article 2(1) of the Berne Convention in G. B. Dinwoodie, W. O. Hennessey and S. Perlmutter, *International Intellectual Property Law and Practice: Documentary Supplement* 641 (Newark: Mathew Bender & Company, Inc., 2001). See also Anonymous, 'Works Not Covered by Copyright', available at <http://www.citmedialaw.org/legal-guide/works-not-covered-copyright>; §102(b) of the 1976 US Copyright Act (Title 17 of the US Code).

61 Article 2(2) of the Berne Convention in Dinwoodie et. al., note 60 above at 642.

62 Article 5(2) of the Berne Convention, *Id.* at 642. See also, D. Lange, M. LaFrance and G. Myers. *Intellectual Property: Cases and Materials* 768-69, 781-82 (St. Paul, MN: West Group 2nd ed., 2003).

63 See Act on Protection and Promotion of Thai Medicinal Intelligence, note 42 above, Section 20 of the Act reads: 'personal formula of traditional Thai drugs or personal text on traditional Thai medicine... may be registered for protection of intellectual property rights and may be promoted according to the provisions of this Act by applying for registration to the registrar'. The only substantive reasons for rejection of an application, as contained in Section 22 of the Act, are when the registrar is of the opinion that the formula or text belongs to the national or general category of formulae or texts or when a personal drug formula has been developed on non-medical basis like the use of extracts of plants, animals or microorganisms that have not been obtained from the natural extracts or the transformation that is not considered rough transformation. Otherwise an uncontested applicant or an applicant or an objector who prevailed in case of an objection, is, pursuant to Section 31, issued with a registration certificate following an order of the registrar 'authorizing the registration of protection of intellectual property rights on traditional Thai medicine to the applicant or the [successful] objector'.

64 WIPO has made extensive studies of courtiers or regions with *sui generis* laws for the protection of traditional knowledge, namely the African Union, Brazil, China, Costa Rica, India, Peru, Philippines, Portugal, Thailand, and the United States of America. WIPO then stated that 'the following fifteen elements that may be used to describe *sui generis* measures for TK protection': (1) Policy Objectives; (2) Scope of Protected Subject Matter; (3) Conditions of Access to Traditional Knowledge; (4) Conditions of Protection of Traditional Knowledge; (5) Scope of Rights; (6) Right Holder; (7) Acquisition of Rights; (8) Expiration and Loss of Rights; (9) Sanctions and Enforcement; (10) Registration Mechanisms and Other Procedures for the Acquisition and Maintenance of Rights; (11) Access and Benefit-sharing Elements (Mutually Agreed Terms and Prior Informed Consent); (12) Defensive Protection; (13) Regional and International Protection, Including the Problem of So-called 'Regional Traditional Knowledge'; (14) Institutional Arrangements; (15) Recognition of Customary Laws and Protocols. See WIPO, Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Seventh Session, available at http://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_7/wipo_grtkf_ic_7_6-main1.pdf. See also WIPO, Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Fifth Session, available at, http://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_5/wipo_grtkf_ic_5_8.pdf. In light of these elements, the Thai Act, as analyzed in this section, may be said to contain insufficient or no provisions regarding elements No. 2, 3, 4, 7, 11, 12, 13 and 15.

the case of joint ownership, fifty years after the death of the last deceased joint owner),⁶⁵ include:

1. sole (joint) ownership on the production of the drug;
2. sole (joint) right over the research, distribution, improvement or development of formulae on traditional Thai medicine;
3. sole (joint) right over intellectual property rights of traditional Thai medicine under the registered text on traditional Thai medicine;
4. the right to permit (license) the rights listed in items 1-3 above;
5. the right to succeed the intellectual property on the formula or text provided that there shall not be other forms of transferring the right.

The implementation of the rights contained in the Act may have some problems. Firstly, the Act is not clear as to the status of an independent discovery by non-traditional means of a similar drug which may be entitled to a patent protection.⁶⁶ Can the person who had registered the traditional Thai drug prevent the patentee of the same drug from producing the drug and vice versa? Secondly, what is meant by 'rights of traditional Thai medicine under the registered text on traditional Thai medicine'? What are these rights? Is this a reference to the entitlements under copyright of the texts? Thirdly, the grant of a 'negative' right impliedly given to an owner of the formula of Thai traditional medicine to stop others from improving or developing the formula, when seen in light of the term given to the comparable right on patents (twenty years in the case of TRIPS),

65 Upon expiry of the term, the formula or text becomes a general formula. See Act on Protection and Promotion of Thai Medicinal Intelligence, note 42 above, Section 33.

66 In case of more than one formulae or texts on traditional Thai medicine applied for intellectual property protection, the first-to-file is entitled to register the same. *Id.*, Section 26.

seems unreasonably long.⁶⁷ Hence, any adaptation to a similar Eritrean legislation of the rights contained in the Thai Act should contain provisions that address these concerns.

Institutional Administration of the Act

As to the implementation of the Act, the general oversight authority is given to the Ministry of Public Health. The Act also establishes a well-represented⁶⁸ Committee on Protection and Promotion of Thai Medicinal Intelligence which, among others, is entrusted with developing intellectual Thai traditional medicine, advising the Minister of Public Health on matters related to the Act, setting standards for registration and appeal concerning the registration of Thai traditional medicine as well as protecting and promoting intellectuals of Thai traditional medicine. Moreover, the Act establishes the Institute for Traditional Thai Medicine for the 'protection and promotion of education, training,

67 Although Section 34(1) of the Act states that 'any act that is of benefit for studies, findings, tests or research according to the regulation specified by the Minister', is an exception to an owner's right on personal formula or text, this exception seems not to include such activities as independently developing or improving a drug based on a registered Thai traditional drug.

68 The representation of various departments in the Committee is a model worth adopting. Chaired by the Permanent Secretary of the Ministry of Public Health, Director-Generals of the Departments of Medical Services, Intellectual Property Rights, Livestock Forestry, Agriculture, Medical Sciences and Secretaries-General of Food and Drug Administration and Environmental Policy and Planning as well as Director of the Medical Registration Division are *ex officio* members of the Committee. In addition to these, practitioners of Thai traditional medicine select practitioners 'with knowledge, capability and experiences in traditional Thai medicine, the production or sales of traditional Thai drugs and plantation or transformation of herbs' to be members of the Committee. The variety of the sectors from which these members come is proof that the conservation and development of TMK requires maintaining of a careful balance among the various interests involved therein. See discussion in section 1.2 above. The author believes that the structure and functions of the Thai Committee on Protection and Promotion of Thai Medicinal Intelligence is a model worth adopting for Eritrea because the interests involved in traditional medicine as the same in Eritrea as in Thailand or any other country which intends to regulate the practice.

research, studies and development of intelligence on traditional Thai medicine and herbs and shall also be responsible for the administrative and technical works of the Committee'. The Institute is responsible for compiling information on traditional Thai medical intelligence.

The idea of constituting separate organs (such as the Committee and the Institute in the case of Thailand) is a logical step to adopt. The first organ, dwelling on policy and overall administrative matters, could serve as a representation of all the interests involved in promoting TMK. The second organ, engaged in research, training and development of traditional medicine, could function as a body of experts devoted to the science of traditional medicine. Mixing both functions into the mandate of a single national organ, although it can avoid establishment of numerous offices and expenses, has the risk of overburdening of a single organ with varied tasks.

Sections 24-32 and 66-72 of the Act provide for the rules on the application, publicising, registration, rejection, objection and appeal processes as well as joint ownership of regarding personal formula or text sought to be protected by the Act. Sections 37-43 provide for the grounds for and process of revocation of registered intellectual property rights.⁶⁹ Sections 73-75 provide for the various mandates and authorities of the competent officials who ensure the proper implementation of the Act.

The essence of the various items listed in the previous paragraph is that legislations on TMK have to contain provisions by which the rights of the appropriate holders of traditional medicinal intelligence are acknowledged in a fair manner for legal protection. Moreover, any such legislation needs to contain provisions by which the exercise of the rights created by such acknowledgment is

monitored by recognised authorities. The author is of the opinion that an Eritrean legislation on TMK has to contain similar provisions mainly because of the absence of an existing system for the acknowledgement, registration and monitoring of the exercise of traditional medicine in Eritrea.

Controlled Herbs and Plan for Conserving Herbs

The Act also provides for the special protection of controlled herbs defined as herbs 'of study and research value, or have important economic significance, or may become extinct'. The Minister of Public Health is authorised to take such measures as specifying the rules or procedures for possession, studying and research, export, transportation, distribution or transformation, conservation and prevention of controlled herbs. The Act states that no person shall research on, export controlled herbs or sell or transform them commercial purposes without a license issued from a licensing authority. The Act then provides for detailed rules on the application for, term and renewal of and the grounds for suspension or revocation of the license. The Act also calls for the preparation by the Minister of Health of a Plan for Conservation of Herbs.

The author believes that adaptation of provision similar to those on the Thai Act on controlled herbs and herb conservation plan is not suitable to the Eritrean context. It has been noted earlier that there is legislation, Proclamation 155/2006, which, although from another perspective, i.e., forestry conservation, gives special protection to some trees and shrubs. Instead of including a chapter in an Eritrean TMK legislation similar to the chapter on Thai Act on controlled herbs and herb conservation plan, a list of trees or shrubs which, owing to their medicinal significance and threat of extinction, need special protection may be submitted to the Ministry of Agriculture which has the authority to add them to the protected trees or shrubs.⁷⁰

⁶⁹ These include misuse of the right against public order and good morals, non-compliance with limitations and conditions linked to the grant of intellectual property rights, exercise of right in such a way as to cause severe damage to the right, not being the appropriate person to register a formula or text, the formula or text sought to be registered being a national or a general formula or text or one based on non-medical basis. See Act on Protection and Promotion of Thai Medicinal Intelligence, note 42 above, Sections 37-38.

⁷⁰ It is to be noted that most of the plants from which Eritrean traditional medicines are prepared are trees or shrubs and not low-growing plants. See Tables 2-4. For this reason, the author recommends Proclamation 155/2006, not a TMK legislation, to protect medicinal trees, shrubs or herbs.

Issues not Addressed in the Act

There are some key issues not addressed in the Act.

Firstly, it is true that traditional medicinal intelligence is part of traditional knowledge and through that part of biological diversity which should be utilised for the benefit of all human kind. States have the right to devise means for protecting biodiversity within their territories. Accordingly, the principle of protecting TMK through intellectual property protection as reflected in the Thai Act is a legitimate step towards preserving and developing TMK. However, the Act needs to operate within the broader sphere of the general principles introduced to maintain balance between rewarding the originators or custodians of traditional knowledge and the equivalent right of humanity to have access to the benefits of such knowledge. The access-benefit sharing scheme described in section 1.3 is the internationally accepted principle in this process.⁷¹ The Thai Act seems inclined to protecting traditional Thai medicinal knowledge by granting them a life-plus-fifty-years right to prevent others who, as of right, should have the right to access and develop such knowledge and share the benefits of such development with the custodians of the knowledge.

Secondly, although the owners of personal formulae or texts on traditional Thai medicine have the right to develop or improve such drugs, the Act needs to contain provisions regulating the manufacture and sale of drugs based on TMK.⁷²

Finally, the Act should, as it is the experience of many countries, state whether traditional Thai

medicinal care is part of the country's national healthcare system;⁷³ however, it is also possible that such statement may be part of a broader policy statement.⁷⁴ Miscellaneous provisions such as the establishment of a pharmacopeia of TMK and an association of practitioners of Thai traditional medicine should also have been included in the Act.

3.1.4 Why Specific Traditional Medicinal Knowledge Legislation for Eritrea?

It was mentioned in section 3.1.1 that the legislative experience of countries on TMK varies from having no legislation at all to having a specific legislation and having a broader health or traditional knowledge legislation part of which regulates TMK. These alternatives are available for Eritrea. The existence of no legislation on traditional knowledge or TMK merits the issuing of legislation thereon. Hence, the argument will be between issuing a specific legislation for TMK and issuing a broader health or traditional knowledge legislation inclusive of TMK. The author argues that issuing legislation specifically devoted to Eritrean TMK is preferable for the following reasons.

Firstly, it will be difficult to represent some interests related to TMK in a broader health or traditional knowledge legislation. For instance, it will be difficult to represent the issue of conservation or

⁷¹ For example, Section 2 of the Philippine Traditional and Alternative Medicines Act of 1997 declares that:

It shall also be the policy of the State to seek a legally workable basis by which indigenous societies would own their knowledge of traditional medicine. When such knowledge is used by outsiders, the indigenous societies can require the permitted users to acknowledge its source and can demand a share of any financial return that may come from its authorized commercial use.

⁷² Parts XVI and XIX as well as Schedule T of the 1995 Drugs and Cosmetics (Amendments) Act of India (as corrected up to 30 November 2004) could be cited as a good example in this regard.

⁷³ For example, Section 2 of the Philippine Traditional and Alternative Medicines Act of 1997 states that 'It is hereby declared the policy of the State to improve the quality and delivery of health care services to the Filipino people through the development of traditional and alternative health care and its integration into the national health care delivery system'.

⁷⁴ For instance, Section 3.0 of the Nigerian Traditional Medicine Policy provides clearly that the vision of the policy is:

To see *the practice of traditional medicine* in Nigeria become a respected mode of treatment, preserving our cultural heritage with respectable practitioners and providers, *delivering quality healthcare* to all Nigerians, and a situation in which the economic potentials of traditional medicine are also actualized to the benefit of all.

The establishment of a situation whereby *both conventional and traditional medicine practitioners* legally and freely *render their services* in parallel but in clear understanding of each other and in close collaboration *at all levels of healthcare delivery system* and providing the chance for the patient to make an informed choice (emphasis added).

access-benefit sharing (applicable to TMK) in health legislations. Similarly, it could be difficult to represent health interests (applicable to TMK) in a broader traditional knowledge legislation.

Secondly, and linked to the first reason, a legislation specific to traditional Eritrean medicinal knowledge will be drafted in such a way that its main principles do not contradict with broader legislations on health, traditional knowledge or biodiversity; thus, a subsequent issuing of a broader legislation would not be redundant. For instance, the TMK legislation cannot be drafted in such a way as to contradict with the access-benefit sharing principle generally applicable to all traditional knowledge or with the basic standard of requiring safety, efficacy and rational use of any medicine in circulation in Eritrea.

Thirdly, a legislation specific to TMK can help Eritrea keep track with the abovementioned global developments specific to TMK.

Finally, the enactment of a legislation specific on TMK would be a good start to initiate an interest in regulating other components or the entirety of traditional knowledge which, as shown in section 2.1, is absent in the national Eritrean biodiversity instruments.

3.2 Eritrean Traditional Medicinal Knowledge Legislation

Based on the analysis of the Thai Act, this section will discuss how and why the various elements of the Thai Act may be included in the Eritrean TMK legislation.

3.2.1 Classes of Traditional Medicinal Knowledge

Eritrean TMK may be classified in a fashion similar to that contained in the Thai Act. In Eritrea, most TMK is deposited in the custody of individuals; however, some traditional medicines are known to members of communities. Hence, the legislation must distinguish between *personal* (known to the discoverer or inheritor or developer of the medicinal knowledge) and *communal* medicinal knowledge (known to an identifiable community or set of communities or personal knowledge that has become known to the public either due to expiry of

the term of protection of personal knowledge or by the voluntary exposure of the knowledge by the custodian thereof) so that the rights due to each class can be separately pursued and exercised. The basic distinction between these two classes of medicinal knowledge will be that individuals will be beneficiaries of personal medicinal knowledge and the relevant communities will, through their representatives, will be beneficiaries of personal medicinal knowledge. By way of exception, the legislation may provide that individual or communal medicinal knowledge that, owing to its significant medicinal impact, should be under public protection may be declared *national* medicinal knowledge so that the government, after duly compensating the original custodians of the knowledge, can exercise the rights on behalf of the Eritrean people. However, the rights created by personal, communal or national TMK should be similar.

3.2.2 Formula and Text of Traditional Medicinal Knowledge

Eritrean TMK is basically kept and transferred orally; there is no identifiable culture of recording or transferring the knowledge in textual form. Hence, the notion of protecting texts of traditional medicinal intelligence, as it the case with the Thai Act, cannot be practical in the Eritrean context. Thus, only the formula or the medicine used for traditional medicinal treatment shall be protected by the legislation.

3.2.3 Form of Protection and Rights

The experience in many countries with protecting traditional knowledge in general is either through conventional intellectual property laws, such as patents, designs, trademarks and geographical indications or through *sui generis* laws.⁷⁵ We have seen in section 2.4.2 that there is no comprehensive intellectually property regime in Eritrea. In the

⁷⁵ For analysis of these two experiences in the WIPO regime, see WIPO, note 64 above and WIPO, Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Sixth Session, available at http://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_6/wipo_grtkf_ic_6_4_rev.pdf.

absence of such law and in a time where there is a need to protect Eritrea's TMK whose significance has been recognised by the Eritrean National Medicinal Policy, the better solution is to devise a protection system different from conventional intellectual property. The fact that TMK is part of the nation's biodiversity also calls for the establishment of a system where the proprietary interests of the custodians of the knowledge is protected by simultaneously allowing others to have access to such knowledge. Such system could be designed to contain most of the elements identified by WIPO as constituting a *sui generis* system for protecting traditional knowledge.⁷⁶

The rights due to the respective custodians of the medicinal knowledge should be presented in positive and negative modes. The positive wing of the rights could be similar to those contained in the Thai Act – except that in the Eritrean case it will be applicable to individuals, communities and the government – and the negative wing will be the right to stop others from exercising those rights without a proper access and benefit sharing agreement with the respective owners of the right.

The term of rights may be similar to the Thai Act or any other convenient period selected by the government with the proviso similar to the Thai Act that any misuse of a registered medicine or medicinal practice or a faulty registration shall lead to an automatic revocation or suspension of the right and entry of the medicinal knowledge to the national class of medicinal knowledge.

In analysing the Thai Act, an issue was raised as to the status of an independent, patentable invention of a drug similar in effect to that of a traditional medicinal drug. In this case, the Eritrean legislation, which does not give a conventional intellectual property protection to traditional medicines, has to state that the exercise of the patent rights on such independently invented drugs shall not be impeded by the protection given to a similar traditional drug.

⁷⁶ See WIPO, Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Seventh Session, note 66 above.

3.2.4 Conditions for Protection

What knowledge will qualify as TMK? The Eritrean legislation has to contain a set of standards to qualify a given medicine as traditional medicine and a given knowledge as TMK. It was stated earlier that the Thai Act does not contain such standards. The following standards, derived from the WIPO list of conditions for protection of traditional knowledge and from the WHO standards for use of medicines in general, may, thus, be listed as conditions for protection of TMK in the Eritrean legislation.

Firstly, the knowledge should be 'traditional' in the sense that it should be knowledge discovered or developed within the livelihood of an Eritrean community as discovered or passed down from generation to generation provided that the treatment involves systems outside modern medical procedures.

Secondly, the respective individual or community must have practiced the medicinal intelligence for a minimum period of time to be set by the legislation, either a one-for-all period of time or separate periods for separate classes of traditional medicinal practices.

Thirdly, the traditional medicine should be available in reasonably enough quantity for use by the public.

Fourthly, the traditional medicine, if it involves drugs, should be submitted to the proper officials for toxicity test and must score an average healing effect as approved by experts in the respective field of medicine. If the treatment involves other techniques, such techniques must be safe and efficient as approved by experts.

Fifthly, to be granted protection, any TMK must be registered with the appropriate office by the appropriate custodian.

3.2.5 Institutional Administration

We had earlier reviewed the advantages of the Thai experience in establishing separate entities that deal with administrative and research aspects of traditional medicinal intelligence. In Eritrea, we had stated that there is no organ established to regulate the development of traditional medicine. The legislation

can seize this opportunity to establish an organ, say an Eritrean Traditional Medicines Body, to develop, manage and supervise an Eritrean traditional medicines policy. This organ would also prepare an action plan to implement policies on traditional medicine, determine human resource needs, prepare reports as well as monitor and evaluate activities related to traditional medicine. The national body should, in cooperation with such research entities as the Medicinal Plants and Drug Discovery Research Centre, oversee the development of and procedure of access to a National Traditional Medicines Database and Information System which should be developed to gather, harness, update and utilise necessary information on traditional medicine. Information that may be stored in this database shall include a comprehensive list of traditional medicine practitioners in Eritrea, database of Eritrean medicinal plants, pharmacopeia of Eritrean traditional medicines and the various techniques of traditional medicinal treatments.

The national body shall also develop code of practice for the practitioners of traditional medicine⁷⁷ as well as monitor the functions of an association of practitioners of traditional medicine.⁷⁸ Moreover, the national body shall establish a comprehensive record for registering Eritrean traditional medicines and practitioners. Such body shall also be authorised to cooperate with other countries in the region in the interest of shared protection of common TMK.⁷⁹

⁷⁷ In all its activities, the national body shall seek the cooperation of other government organs which are involved in the practice of traditional medicine. For instance in the area of documenting traditional medicines and developing code of practice for traditional healers, this national body shall cooperate with the Ministry of Health which has assumed such obligations under the Eritrean National Medicines Policy.

⁷⁸ The legislation cannot provide for detailed rules for establishing an association of traditional healers because Articles 404-482 of the Transitional Civil Code of Eritrea contain the rules for establishing any association in Eritrea.

⁷⁹ The border communities of Eritrea and Ethiopia, for example, may, due to the close cultural, historical and lingual and religious proximity between them, have acquired similar TMK in treating some ailments. Protection of such knowledge necessitates a shared responsibility between the two countries – hence authorizing the Eritrean traditional medicines body to engage in regional cooperation. Such a provision will, in a way, keep the Eritrean legislation in tune with WIPO's list of elements on a *sui generis* protection of traditional knowledge.

If need be, the national body may constitute an advisory group to give expert advice to the national body in all or some of its activities.

Research and training needs of Eritrean TMK should be undertaken by the establishment of an institute, say the National Traditional Medicine Research, Development and Training Centre, which shall harmonise research, development and training needs for implementation of the objectives of the policy. Supervised by the Eritrean Traditional Medicines Body, the Centre would assemble scientists and scholars of fields relevant to traditional medicine and, as contact body with foreign researchers on traditional medicine, would lead and supervise scientific research on developing Eritrean TMK.

3.2.6 Access and Benefit Sharing

We have earlier observed that as part of a nation's biodiversity, traditional medicine should be harnessed under the access-benefit sharing principle contained in the CBD. As a CBD signatory, Eritrea should, in its traditional medicine legislation, should provide for such a mechanism. The Eritrean legislation may derive such provisions from the Bonn Guidelines developed under the CBD to that end. Prior informed consent, mutually agreed terms for the exploitation of the knowledge and fair benefit sharing should be the basis of any agreement to be made between the custodians of the knowledge and any party that wants an access to develop such knowledge.

3.2.7 Manufacturing and Distribution

An essential component of the development of traditional medicinal practice is encouraging the production and distribution of traditional medicines. Eritrean traditional healers often prescribe the purchase and use with instruction of traditional medicines and herbs that are available in the market. The national traditional medicines body should therefore develop manufacturing and distribution standards for traditional medicines. In collaborating with the Ministry of Health, the national body may provide for toxicity levels, identity and purity of manufactured traditional medicines. Rules for the distribution of such drugs as well as the possibility for selling them on drug stores could be developed by the national body.

4

CONCLUSIONS AND RECOMMENDATIONS

TMK is now attracting international attention and assuming its deserved status. Its emergence into the global arena triggered various interests represented by respective international organisations. The efforts being exerted to reconcile these interests have not, however, reached a level where TMK is regulated in a comprehensive manner representing each interest.

Eritrea, a nation of diverse TMK, finds itself between two unbalanced weights. On the one side of the scale are the bounties of age-old traditional medicinal wisdoms fitting for proper scientific validation. On the other side of the scale, though, is the disquieting status of the near-absent policy and legal framework and institutional capacity to protect, conserve and develop this bliss, more so the lack of coordination among the state and research organs burdened with enhancing same.

The Eritrean government, obliged as it is under the CBD, can seize the current status of Eritrean TMK to call for an extensive research to further delve into the wealth of Eritrean TMK. A legislation that specifically provides for a registration-for-proprietary-protection of TMK needs to be subsequently developed. Such legal framework can contribute in achieving the CBD objective of benefit sharing with human kind and also in securing an economic prosperity and cultural satiety for the Eritrean people.

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