Product name: Gen50 Kyck
AUST L: 461726
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Evidence Package
Riboflavin (B2)

Table of Contents

Table 6a: Executive Summary of Therapeutic Indications

Indication identifier	System targeted	Therapeutic indication	Required dosage	Specific/ Non-specific
RIBOFLAVIN 1	General health or body parts	• Maintain/support general health and wellbeing • Maintain /support energy levels • Maintain/support body tissue repair/regeneration • Maintain/support eye health • Antioxidant/Reduce free radicals formed in the body • Helps reduce/decrease free radical damage to body cells • Maintain/support natural liver cleansing/detoxification processes • Maintain/support hair growth • Maintain/support hair health • Maintain/support nail health/strength/thickness	1.3 mg	Non specific
RIBOFLAVIN 2	**Cardiovascular system**	• Aid/assist healthy red blood cell production	1.3 mg	Non-specific
RIBOFLAVIN 3	**Immune system**	• Maintain/support healthy immune system function • Maintain/support immune system health	1.3 mg	Non specific

RIBOFLAVIN 4	**Nutrition**	• Helps prevent dietary (state vitamin/mineral/nutrient [riboflavin]) deficiency • Maintain/support (state vitamin/mineral/nutrient [riboflavin]) levels in the body • Aid/assist/helps metabolism of (state vitamin/mineral/nutrient [carbohydrates, lipids, proteins])	1.3 mg	Non specific
RIBOFLAVIN5	**Skin**	• Maintain/support skin health • Maintain/support skin repair/healing/regeneration in healthy individuals	1.3 mg	Non specific

Table 6b: Evidence Summary for Scientific Indications

INDICATION 1						
Indication	**Evidence reference details**	**Ingredient**	**Dosage**	**Patient population**	**Summary of findings**	**Balance of evidence**
		Plant/animal part and preparation	Daily dosage, frequency & method	Subject, characteristics, health condition, ages, gender, ethnicity	Include enough information to demonstrate relevance and study outcomes. Any justifications from table 4d of Checklist 4 should be included here.	'Primary supporting', 'Secondary supporting'
• Maintain/support general health and wellbeing • Maintain /support energy levels • Maintain/support eye health • Maintain/support body tissue repair/regeneration • Antioxidant/Reduce free radicals formed in the body • Helps reduce/ decrease free	Health Canada Monographs, Health Canada, 2023	Riboflavin	1.1-1.3 mg	N/A	Helps in energy metabolism and in tissue formation. Helps to maintain healthy mucous membranes. Helps to maintain normal red blood cells. Helps to maintain normal metabolism of iron. Helps to prevent riboflavin deficiency. Helps to maintain the body's ability to metabolize nutrients.	Primary supporting

radical damage to body cells • Maintain/support natural liver cleansing/detoxification processes • Maintain/support hair growth • Maintain/support hair health • Maintain/support nail health/ strength/thickness	GlobinMed, Global Information Hub on Integrated Medicine, 2021	Riboflavin	1.1-1.3 mg	N/A	Riboflavin is essential for normal growth and development, reproduction, physical performance and well being. Vitamin B_2 is water-soluble and, like other B vitamins, it is not appreciably stored and must be supplied daily. Riboflavin combines with phosphoric acid to become part of two important flavin co-enzymes, FMN (flavin mononucleotide) and FAD (flavin adenine dinucleotide). FMN and FAD are known to bind to over 100 flavoprotein enzymes. These riboflavin-containing enzymes, which function as hydrogen carriers, catalyze many of the oxidation-reduction reactions in cells. **Functions in the body** **Fatty Acids/Amino Acids/Pyruvic Acids** Riboflavin-containing enzymes play roles in fatty acid synthesis, beta-oxidation of fatty acids, deamination of amino acids, and conversion of pyruvic acid to acetyl coenzyme A. **Energy Production** Riboflavin plays a role in the conversion of carbohydrates to ATP in the production of energy. **Antioxidant Activity**	Primary supporting

					has antioxidant activity, both by itself and as part of the enzyme glutathione reductase **Growth** is necessary for growth and reproduction and the healthy growth of skin, hair and nails. Riboflavin is part of glutathione reductase, which is an important enzyme that helps provide antioxidant protection in the eyes.	
	U.S. Department of Health and Human Services. (2022). Retrieved from National Institute of Health Office of Dietary Supplements website	Riboflavin	1.1-1.3 mg	N/A	Riboflavin is an essential component of two major coenzymes, flavin mononucleotide (FMN; also known as riboflavin-5'-phosphate) and flavin adenine dinucleotide (FAD). These coenzymes play major roles in energy production; cellular function, growth, and development; and metabolism of fats, drugs, and steroids. he conversion of the amino acid tryptophan to niacin (sometimes referred to as vitamin B3) requires FAD. Similarly, the conversion of vitamin B6 to the coenzyme pyridoxal 5'-phosphate needs FMN. In addition, riboflavin helps maintain normal levels of homocysteine, an amino acid in the blood	Primary supporting

	Braun, L., & Cohen, M. (2015). Riboflavin. In *Herbs & Natural Supplements. An evidence-based guide* (4th ed., pp. 1062-69). Chatswood, NSW: Elsevier Australia.	Riboflavin	<70 yrs: 1.1-1.3 mg >70 yrs: 1.3-1.6mg	N/A	Riboflavin is involved in many different biological processes and is essential for maintaining health. The flavoproteins are central to carbohydrate, protein and lipid metabolism, are involved in ATP production, and are essential for immune function, tissue repair processes and general growth (required for healthy growth of skin, hair and nails). Riboflavin activates vitamin B6 and folate, which are essential cofactors in neurotransmitter formation and metabolism. Riboflavin exerts in functions as two flavin enzymes (flavoenzymes), FAD and FMN. These coenzymes are essential in carbohydrate, amino acid and lipid metabolism. FMN and FAD function as coenzymes in cellular antioxidant protection and for a variety of oxidative enzymes systems. Riboflavin increases intracellular levels of reduced glutathione and maintains the glutathione redox cycle as a part of the FAD-dependent enzyme glutathione reductase. Clinical uses include wound healing. Riboflavin deficiency lengthens the time to epithelialisation of wounds and slows the rate of wound contraction. Glutathione reductase is a key enzyme involved in lens protection. Riboflavin levels indirectly influence glutathione	Primary supporting

					reductase activity, increasing the ability of the lens to deal with free radical formation. Riboflavin, as FAD, is the cofactor for methylenetetrahydrofolate reductase (MTHFR) a key enzyme in the folate activation pathway, catalysing the interconversion of 5,10-methylene tetrahydrofolate and 5-methyltetrahydrofolate-converting folate into its active form. Fetal and embryonic development require adequate riboflavin status.	

	Linus Pauling Institute Riboflavin retrieved July 2024	Riboflavin	Adults: 1.1-1.3 mg		Riboflavin is the precursor of the coenzymes, flavin adenine dinucleotide (FAD) and flavin mononucleotide (FMN). They act as electron carriers in a number of oxidation-reduction (redox) reactions involved in energy production and in numerous metabolic pathways. Riboflavin deficiency can affect multiple pathways in the metabolism of vitamin B6, folate, niacin, and iron. Riboflavin deficiency has been linked to preeclampsia in pregnant women. The risk of preeclampsia has recently been associated with the presence of a genetic variant (C677T) in the methylenetetrahydrofolate reductase (MTHFR) gene. This gene codes for the MTHFR enzyme, which is FAD-dependent. Riboflavin (in the form, FAD) is required as a cofactor for the key folate-metabolizing enzyme, MTHFR. A low status of riboflavin status may interfere with the metabolism of folate, particularly in individuals homozygous for the MTHFR C677T gene variant; these individuals exhibit a higher risk of cardiovascular disease (CVD). Emerging evidence from intervention trials supports a protective role for riboflavin against hypertension in individuals with the	Primary supporting

					MTHFR 677TT genotype. Riboflavin deficiency alters iron metabolism. Although the mechanism is not clear, research in animals suggests that riboflavin deficiency may impair iron absorption, increase intestinal loss of iron, and/or impair iron utilization for the synthesis of hemoglobin (Hb). In humans, improving riboflavin nutritional status has been found to increase circulating Hb levels. Correction of riboflavin deficiency in individuals who are both riboflavin and iron deficient improves the response of iron-deficiency anemia to iron therapy. Anemia during pregnancy, a worldwide public health problem, is responsible for considerable perinatal morbidity and mortality. The management of maternal anemia includes the supplementation with iron alone or iron in combination with folic acid, and it has been considered that riboflavin supplementation could enhance the iron-folic acid supplementation. Randomized, double-blind intervention trials conducted in pregnant women with anemia in Southeast Asia showed that a combination of folic acid, iron, vitamin A, and riboflavin improved Hb levels and decreased anemia prevalence compared to the iron-folic acid supplementation alone.	

	Gaby, A. (2017). Riboflavin. In *Nutritional Medicine* (2nd ed., pp. 68-71). Concord, NH: Fritz Perlberg Publishing.	Riboflavin	1.1-1.3 mg	N/A	Riboflavin (vitamin B_2) is a water-soluble B vitamin. It is found in the body primarily in its biologically active coenzyme forms, flavin mononucleotide (also called riboflavin 5'-phosphate) and flavin adenine dinucleotide (FAD). As a component of FAD, riboflavin is involved in the electron-transport chain and, consequently, in the synthesis of adenosine triphosphate (ATP), the body's main storage form of energy. Riboflavin also participates in various oxidation-reduction reactions and is a cofactor for glutathione reductase, which generates glutathione, an important antioxidant. In addition, riboflavin is involved in iron utilization and in the conversion of vitamin B_6 to its biologically active form, pyridoxal phosphate	Primary supporting

	Gropper, S., Smith, J., & Carr, T. (2018). Water soluble vitamins. In *Advanced Nutrition and Human Metabolism* (7th ed., pp. 321-25). Boston: Cengage Learning.	Riboflavin	1.1-1.3 mg	N/A	FMN and FAD function as coenzymes for a variety of oxidative enzymes and remain bound to the enzymes dur-ing the oxidation-reduction reactions. Flavins can act as oxidizing agents because of their ability to accept a pair of hydrogen atoms **Functions in the body** **Nutrient Metabolism and Energy Production** Flavoproteins exhibit a wide range of redox potentials and therefore can play a variety of roles in intermediary metabolism. Examples include the electron transport chain, In vitamin B6 metabolism, pyridoxine phosphate oxidase—which converts pyridoxamine phosphate (PMP) and pyridoxine phosphate (PNP) to pyridoxal phosphate (PLP), the primary coenzyme form of vitamin B6 is dependent upon FMN L-amino oxidase uses FMN in the dehydrogenation of L-amino acids to imino acids. In the oxidative decarboxylation of pyruvate and a-ketoglutarate, FAD serves as an intermediate electron carrier, with NADH being the final reduced product. Succinate dehydrogenase is an FAD flavoprotein that removes electrons from succinic acid to form fumarate, and that forms	Primary supporting

					FADH2 from FAD). The electrons are then passed into the electron transport chain by coenzyme Q In fatty acid beta-oxidation, acyl-CoA dehydrogenasesrequire FAD Sphinganine oxidase, in sphingosine synthesis, requires FAD. As a coenzyme for an oxidase such as xanthine oxidase involved in purine catabolism, Similarly, aldehyde oxidase using FAD reacts with alde-hydes such as pyridoxal (vitamin B6)—to form pyridoxic acid—and retinal (a form of vitamin A)—to produce retinoic acid—while also passing electrons to oxygen and generating hydrogen peroxide. Synthesis of a folate as 5-methyl THF requires FADH2 A step in the synthesis of niacin from tryptophan that is catalyzed by kynureninase monooxygenase requires FAD In choline catabolism, several dehydrogenases require FAD Some neurotransmitters (such as dopamine) and other amines (tyramine and histamine) require FAD-dependent monoamine oxidase for metabolism. Reduction of the oxidized form of glutathione (GSSG) to its reduced form (GSH) depends on FAD-dependent glutathione reductase	

					Ribonucleotide reductase catalyzes the conversion of ribonucleotides to deoxyribonucleotides), which are needed for DNA synthesis. Hydrogen peroxide production from singlet oxygen (O12, which is derived from, e.g., activated white blood cells) and water via an antibody-catalyzed water oxidation pathway also appears to require riboflavin Beta-oxidation of fatty acids in the mitochondria is catalyzed by several acyl-CoA dehydrogenases, which require FAD as coenzymes	

	Therapeutic Research Center. (2023). Riboflavin. Retrieved from Natural Medicines website	Riboflavin	1.1-1.3 mg	N/A	Riboflavin is a B vitamin, which is involved in vital metabolic processes in the body and is necessary for normal cell function, growth, and energy production. In the body, riboflavin is converted to flavin adenine dinucleotide (FAD) and flavin mononucleotide (FMN). FAD and FMN are coenzymes that attach to proteins (flavoproteins) to activate them and play a role in many metabolic processes in the body. Examples include methylenetetrahydrofolate reductase (MTHFR), glutathione reductase, and kynurenine mono-oxygenase. Riboflavin is needed for processes involved with activation of vitamin B6, creation of niacin, activity of the adrenal gland, formation of red blood cells, antibody production, mitochondrial activity, growth, digestion, eye health, etc. The riboflavin-derived FAD is a cofactor for the MTHFR enzyme involved in the remethylation of homocysteine to methionine. FAD is a cofactor for glutathione reductase activity, and the increased glutathione levels produced by this enzyme may play a role in cataract prevention.	Primary supporting

	Association of Naturopathic Practitioners. (2020). Riboflavin. Retrieved from: Herb Drug Nutrient.	Riboflavin	1.1-1.6 mg	N/A	Riboflavin is an essential component of the flavocoenzymes flavin adenine dinucleotide (FAD) and flavin mononucleotide (FMN) involved with the metabolism of fats, proteins and carbohydrates. FAD is essential for energy production in the respiratory chain in the mitochondria. Flavocoenzymes also play a role in cytochrome P450 detoxification of drugs and xenobiotics. FAD is also necessary for the endogenous antioxidant glutathione and xanthine oxidase responsible for uric acid metabolism. Riboflavin deficiency may cause soreness and inflammation of the oral cavity, angular stomatitis, seborrheic dermatitis, growth disturbances and increased risk of eclampsia of pregnancy.	Primary supporting

	Higdon, J. An Evidence Based Approach to Vitamins and Minerals, Thieme, 2003. pp. 30-35.	Riboflavin	1.1-1.3 mg	N/A	Living organisms derive most of their energy from oxidation-reduction reactions, which are processes that involve the transfer of electrons. Flavocoenzymes participate in redox reactions in numerous metabolic pathways. They are critical for the metabolism of carbohydrates, fats and proteins. FAD is part of the electron transport chain, which is central to energy production. Together with cytochrome P450, flavocoenzymes also participate in the metabolism of drugs and toxins. Glutathione reductase is an FAD-dependent enzyme that participates in redox cycle of glutathione. Xanthine oxidase is another FAD-dependent enzyme, which catalyzes the oxidation of hypoxanthine and xanthine to uric acid. Uric acid is one of the most effective water soluble antioxidants in the blood. Methylene tetrahydrofolate reductase (MTHFR) is an FAD-dependent enzyme that plays an important role in maintaining the specific folate coenzyme required to form methionine from homocysteine. Disease prevention includes cataracts: A cross-sectional study of 2900 Australian men and women, aged 49 years and older, found that those in the highest quintile of riboflavin intake were 50% less likely to have	Primary supporting

					cataracts than those in the lowest quintile.	

INDICATION 2						
Indication	**Evidence reference details**	**Ingredient**	**Dosage**	**Patient population**	**Summary of findings**	**Balance of evidence**
		Plant/animal part and preparation	Daily dosage, frequency & method	Subject, characteristics, health condition, ages, gender, ethnicity	Include enough information to demonstrate relevance and study outcomes. Any justifications from table 4d of Checklist 4 should be included here.	'Primary supporting', 'Secondary supporting'
• Aid/assist healthy red blood cell production	Health Canada Monographs, Health Canada, 2023	Riboflavin	1.1-1.3 mg	N/A	Helps to maintain normal red blood cells.	Primary supporting

	Linus Pauling Institute Riboflavin retrieved July 2024	Riboflavin	Adults: 1.1-1.3 mg Pregnancy: 1.4 mg Lactation: 1.6 mg		Riboflavin deficiency can affect multiple pathways in the metabolism of vitamin B6, folate, and iron. Riboflavin deficiency alters iron metabolism. Although the mechanism is not clear, research in animals suggests that riboflavin deficiency may impair iron absorption, increase intestinal loss of iron, and/or impair iron utilization for the synthesis of hemoglobin (Hb). In humans, improving riboflavin nutritional status has been found to increase circulating Hb levels. Correction of riboflavin deficiency in individuals who are both riboflavin and iron deficient improves the response of iron-deficiency anemia to iron therapy. Anemia during pregnancy, a worldwide public health problem, is responsible for considerable perinatal morbidity and mortality. The management of maternal anemia includes the supplementation with iron alone	Primary supporting

					or iron in combination with folic acid, and it has been considered that riboflavin supplementation could enhance the iron-folic acid supplementation.	
	Therapeutic Research Center. (2023). Riboflavin. Retrieved from Natural Medicines website	Riboflavin	1.1-1.3 mg	N/A	Riboflavin is needed for processes involved with the formation of red blood cells.	Primary supporting

INDICATION 3

Indication	Evidence reference details	Ingredient	Dosage	Patient population	Summary of findings	Balance of evidence
		Plant/animal part and preparation	Daily dosage, frequency & method	Subject, characteristics, health condition, ages, gender, ethnicity	Include enough information to demonstrate relevance and study outcomes. Any justifications from table 4d of Checklist 4 should be included here.	'Primary supporting', 'Secondary supporting'

• Maintain/support healthy immune system function • Maintain/support immune system health	Wisneski L The Professional Reference to Conditions Herbs and Supplements, 'Vitamin B2 (Riboflavin)' Integrative Medicine Communications Access 2000	Riboflavin	Adult: 1.0-1.3 mg	N/A	Riboflavin is necessary for normal development and repair of the immune system. Therapeutic uses include enhances immune function.	Primary supporting

	Braun, L., & Cohen, M. (2015). Riboflavin. In *Herbs & Natural Supplements. An evidence-based guide* (4th ed., pp. 1062-69). Chatswood, NSW: Elsevier Australia.	Riboflavin	<70 yrs: 1.1-1.3 mg >70 yrs: 1.3-1.6mg	N/A	Riboflavin is essential for immune function,	Primary supporting

INDICATION 4						
Indication	**Evidence reference details**	**Ingredient**	**Dosage**	**Patient population**	**Summary of findings**	**Balance of evidence**
		Plant/animal part and preparation	Daily dosage, frequency & method	Subject, characteristics, health condition, ages, gender, ethnicity	Include enough information to demonstrate relevance and study outcomes. Any justifications from table 4d of Checklist 4 should be included here.	'Primary supporting', 'Secondary supporting'
• Helps prevent dietary (state vitamin/mineral/ nutrient [riboflavin]) deficiency • Maintain/suppo rt (state	Health Canada Monographs , Health Canada, 20 23	Riboflavin	1.1-1.3 mg	N/A	Helps to maintain normal metabolism of iron. Helps to prevent riboflavin deficiency. Helps to maintain the body's ability to metabolize nutrients.	Primary supporting

vitamin/mineral/ nutrient [riboflavin]) levels in the body • Aid/assist/helps metabolism of (state vitamin/mineral/ nutrient [carbohydrates, lipids, proteins])	U.S. Department of Health and Human Services. (2022). Retrieved from National Institute of Health Office of Dietary Supplements website	Riboflavin	1.1-1.3 mg	N/A	Riboflavin is an essential component of two major coenzymes, flavin mononucleotide (FMN; also known as riboflavin-5'-phosphate) and flavin adenine dinucleotide (FAD). These coenzymes play major roles in the metabolism of fats. The conversion of the amino acid tryptophan to niacin (sometimes referred to as vitamin B3) requires FAD. Similarly, the conversion of vitamin B6 to the coenzyme pyridoxal 5'-phosphate needs FMN.	Primary supporting

	Braun, L., & Cohen, M. (2015). Riboflavin. In *Herbs & Natural Supplements. An evidence-based guide* (4th ed., pp. 1062-69). Chatswood, NSW: Elsevier Australia.	Riboflavin	<70 yrs: 1.1-1.3 mg >70 yrs: 1.3-1.6mg	N/A	Riboflavin is involved in many different biological processes and is essential for maintaining health. The flavoproteins are central to carbohydrate, protein and lipid metabolism. Riboflavin activates vitamin B6 and folate, which are essential cofactors in neurotransmitter formation and metabolism. Riboflavin exerts in functions as two flavin enzymes (flavoenzymes), FAD and FMN. These coenzymes are essential in carbohydrate, amino acid and lipid metabolism. Riboflavin, as FAD, is the cofactor for methylenetetrahydrofolate reductase (MTHFR) a key enzyme in the folate activation pathway, catalysing the interconversion of 5,10-methylene tetrahydrofolate and 5-methyltetrahydrofolate-converting folate into its active form.	Primary supporting

	Gaby, A. (2017). Riboflavin. In *Nutritional Medicine* (2nd ed., pp. 68-71). Concord, NH: Fritz Perlberg Publishing.	Riboflavin	1.1-1.3 mg	N/A	Riboflavin is involved in iron utilization and in the conversion of vitamin B_6 to its biologically active form, pyridoxal phosphate	Primary supporting

	Linus Pauling Institute Riboflavin retrieved July 2024	Riboflavin	Adults: 1.1-1.3 mg		Riboflavin deficiency can affect multiple pathways in the metabolism of vitamin B6, folate, niacin, and iron. Although the mechanism is not clear, research in animals suggests that riboflavin deficiency may impair iron absorption, increase intestinal loss of iron, and/or impair iron utilization for the synthesis of hemoglobin (Hb). In humans, improving riboflavin nutritional status has been found to increase circulating Hb levels. Correction of riboflavin deficiency in individuals who are both riboflavin and iron deficient improves the response of iron-deficiency anemia to iron therapy.	Primary supporting

	Gropper, S., Smith, J., & Carr, T. (2018). Water soluble vitamins. In *Advanced Nutrition and Human Metabolism* (7th ed., pp. 321-25). Boston: Cengage Learning.	Riboflavin	1.1-1.3 mg	N/A	Functions in the body Nutrient Metabolism and Energy Production Flavoproteins exhibit a wide range of redox potentials and therefore can play a variety of roles in intermediary metabolism. Examples include the electron transport chain, In vitamin B6 metabolism, pyridoxine phosphate oxidase—which converts pyridoxamine phosphate (PMP) and pyridoxine phosphate (PNP) to pyridoxal phosphate (PLP), the primary coenzyme form of vitamin B6 is dependent upon FMN L-amino oxidase uses FMN in the dehydrogenation of L-amino acids to imino acids. In the oxidative decarboxylation of pyruvate and a-ketoglutarate, FAD serves as an intermediate electron carrier, with NADH being the final reduced product.	Primary supporting

					Succinate dehydrogenase is an FAD flavoprotein that removes electrons from succinic acid to form fumarate, and that forms FADH2 from FAD). The electrons are then passed into the electron transport chain by coenzyme Q In fatty acid beta-oxidation, acyl-CoA dehydrogenasesrequire FAD Sphinganine oxidase, in sphingosine synthesis, requires FAD. As a coenzyme for an oxidase such as xanthine oxidase involved in purine catabolism, Similarly, aldehyde oxidase using FAD reacts with aldehydes such as pyridoxal (vitamin B6)—to form pyridoxic acid—and retinal (a form of vitamin A)—to produce retinoic acid—while also passing electrons to oxygen and generating hydrogen peroxide.	

					Synthesis of a folate as 5-methyl THF requires FADH2 A step in the synthesis of niacin from tryptophan that is catalyzed by kynureninase monooxygenase requires FAD In choline catabolism, several dehydrogenases require FAD Some neurotransmitters (such as dopamine) and other amines (tyramine and histamine) require FAD-dependent monoamine oxidase for metabolism. Reduction of the oxidized form of glutathione (GSSG) to its reduced form (GSH) depends on FAD-dependent glutathione reductase Ribonucleotide reductase catalyzes the conversion of ribonucleotides to deoxyribonucleotides), which are needed for DNA synthesis. Hydrogen peroxide production from singlet oxygen (O12, which	

					is derived from, e.g., activated white blood cells) and water via an antibody-catalyzed water oxidation pathway also appears to require riboflavin Beta-oxidation of fatty acids in the mitochondria is catalyzed by several acyl-CoA dehydrogenases, which require FAD as coenzymes	

	Therapeutic Research Center. (2023). Riboflavin. Retrieved from Natural Medicines website	Riboflavin	1.1-1.3 mg	N/A	In the body, riboflavin is converted to flavin adenine dinucleotide (FAD) and flavin mononucleotide (FMN). FAD and FMN are coenzymes that attach to proteins (flavoproteins) to activate them and play a role in many metabolic processes in the body. Examples include methylenetetrahydrofolate reductase (MTHFR), glutathione reductase, and kynurenine mono-oxygenase. Riboflavin is needed for processes involved with activation of vitamin B6, creation of niacin. The riboflavin-derived FAD is a cofactor for the MTHFR enzyme involved in the remethylation of homocysteine to methionine. FAD is a cofactor for glutathione reductase activity, and the increased glutathione levels produced by this enzyme may play a role in cataract prevention.	Primary supporting

	Association of Naturopathic Practitioners. (2020). Riboflavin. Retrieved from: Herb Drug Nutrient.	Riboflavin	1.1-1.6 mg	N/A	Riboflavin is an essential component of the flavocoenzymes flavin adenine dinucleotide (FAD) and flavin mononucleotide (FMN) involved with the metabolism of fats, proteins and carbohydrates. FAD is also necessary for the endogenous antioxidant glutathione and xanthine oxidase responsible for uric acid metabolism.	Primary supporting

	Higdon, J. An Evidence Based Approach to Vitamins and Minerals, Thieme, 2003. pp. 30-35.	Riboflavin	1.1-1.3 mg	N/A	Flavocoenzymes are critical for the metabolism of carbohydrates, fats and proteins. Glutathione reductase is an FAD-dependent enzyme that participates in redox cycle of glutathione. Xanthine oxidase is another FAD-dependent enzyme, which catalyzes the oxidation of hypoxanthine and xanthine to uric acid. Methylene tetrahydrofolate reductase (MTHFR) is an FAD-dependent enzyme that plays an important role in maintaining the specific folate coenzyme required to form methionine from homocysteine.	Primary supporting

INDICATION 5						
Indication	**Evidence reference details**	**Ingredient**	**Dosage**	**Patient population**	**Summary of findings**	**Balance of evidence**
		Plant/animal part and preparation	Daily dosage, frequency & method	Subject, characteristics, health condition, ages, gender, ethnicity	Include enough information to demonstrate relevance and study outcomes. Any justifications from table 4d of Checklist 4 should be included here.	'Primary supporting', 'Secondary supporting'

ort skin health ort skin repair eration in healthy	Health Canada Monographs, Health Canada, 2023	Riboflavin	1.1-1.3 mg	N/A	Helps in tissue formation.	Primary supporting

	GlobinMed, Global Information Hub on Integrated Medicine, 2021	Riboflavin	1.1-1.3 mg	N/A	Riboflavin is essential for normal growth and development. **Functions in the body** Growth is necessary for growth and reproduction and the healthy growth of skin, hair and nails.	Primary supporting
	U.S. Department of Health and Human Services. (2022). Retrieved from National Institute of Health Office of Dietary Supplements website	Riboflavin	1.1-1.3 mg	N/A	Riboflavin is an essential component of two major coenzymes, flavin mononucleotide (FMN; also known as riboflavin-5'-phosphate) and flavin adenine dinucleotide (FAD). These coenzymes play major roles in growth, and development	Primary supporting
	Braun, L., & Cohen, M. (2015). Riboflavin. In *Herbs & Natural Supplements. An evidence-based guide* (4th ed., pp. 1062-69). Chatswood, NSW: Elsevier Australia.	Riboflavin	<70 yrs: 1.1-1.3 mg >70 yrs: 1.3-1.6mg	N/A	Riboflavin is involved in many different biological processes and is essential for maintaining health. The flavoproteins are central to tissue repair processes and general growth (required for healthy growth of skin, hair and nails).	Primary supporting

	Association of Naturopathic Practitioners. (2020). Riboflavin. Retrieved from: Herb Drug Nutrient.	Riboflavin	1.1-1.6 mg	N/A	Riboflavin deficiency may cause angular stomatitis, seborrheic dermatitis.	Primary supporting